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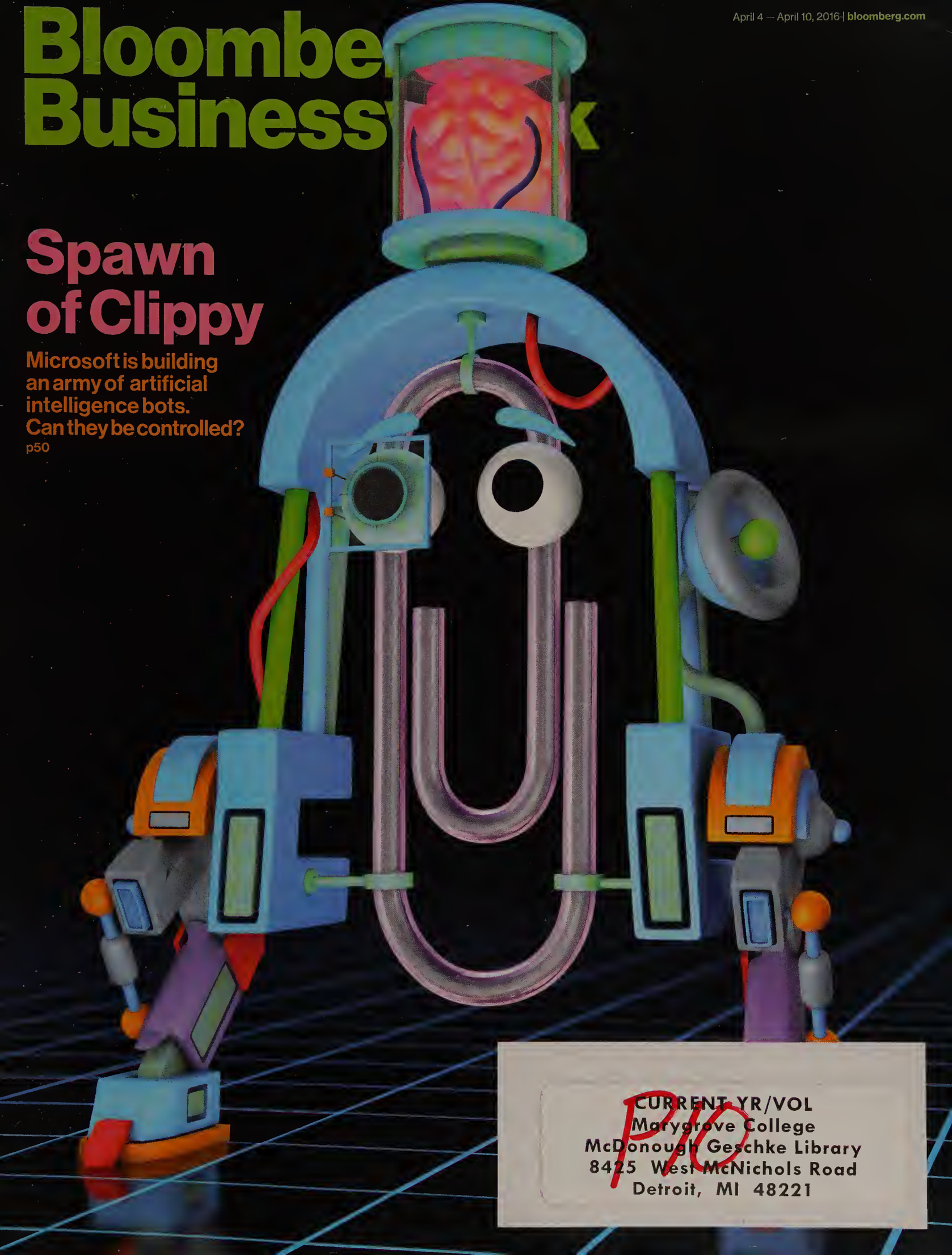

Spawn of Clippy

Microsoft is building an army of artificial intelligence bots. Can they be controlled?

p50

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Contents

"The boring games are the ones where you just draw better cards.
The exciting ones are when by luck and math you should have lost.
That isn't probability.
That's you"
p21

"People were using something they thought was perfectly safe. And it isn't. At least give people the choice. J&J didn't give people a choice"
p54

"I have always said that there are two types of politics—what people see and what really makes things happen. I worked in politics that are not seen"
p60

"And then Olivia Newton-John showed up in her black leather pants, and I thought for sure I was going to hell"
p67

Bloomberg Businessweek

April 4 — April 10, 2016

Opening Remarks Sure, free trade's great. But that doesn't mean there aren't losers 6

Bloomberg View India's smoking problem • A lost labor reform opportunity in France 10

Global Economics

Brazil's poor love Lula. And they may be his and Rousseff's salvation 13

Suddenly, the U.S. is dripping with imported oil 14

Why they're photographing garbage in India 16

China considers upping its painkiller dosage 16

Companies/Industries

Quest's Blueprint lets athletes gaze deeper, deeper, deeper into themselves 19

GM and Tesla have dueling electric vehicles on the way, and this fight could get nasty 20

Falling under the enchantment of Magic: The Gathering 21

Burt's Bees cosmetics: Ordinary stateside, special abroad 22

Briefs: Cuts at Boeing; *da* to Bud in Russia 23

Politics/Policy

The SEIU fought for a $15 minimum wage. It's still fighting for its future 25

Candidates get cheaper ads than super PACs. Guess who that helps 26

Carter Page: From Russia, with love, to Trump's campaign 27

Truckers' pensions may be about to fall off a cliff 27

A Bill: The end of party line voting? 28

Charlie Rose talks with Treasury Secretary Jack Lew 30

Technology

Startup Carbon takes 3D printing to the next level 33

Google tries to puff up its cloud 34

China announces it's stopping subsidies for EV batteries, and Samsung and LG get nervous 35

After Square's IPO, nobody wants to follow in its footsteps 36

Innovation: A phone that needs no fingers 37

Markets/Finance

What's this startup worth? Seems mutual funds can't get their stories straight 39

An awkward embrace with Malaysia's prime minister leads to a Goldman star's downfall 40

The perfect storm soaking Credit Suisse 42

The Fed posts a chart, then wishes markets wouldn't take it so seriously 42

Bid/Ask: Anbang really wants Starwood; Spotify's growing pile of cash 43

Focus On/Agriculture

India's appetite for legumes grows, and suddenly lentils are a Northern Plains cash crop 44

In Iowa, farmers and city folk slug it out over nitrate in water 45

For Big Ag, the sub-Saharan farm crisis is a business opportunity 47

After five years of breakneck expansion, the largest U.S. agricultural co-op hits the brakes 48

Features

There Will Be Bots Microsoft bets big on artificial intelligence 50

Toxic Baby Powder? The risk to J&J posed by a possible talcum-cancer link 54

Campaign Hacker Andrés Sepúlveda says he manipulated elections for eight years 60

Etc.

When it comes to the box office, God is good 67

Fashion: Put a little flare in your pants 70

Drinks: You may soon be sipping a dry white from Nebraska 71

Productivity: Bullet Journaling is a simple, sustainable solution for fixing your daily disorganization 72

The Critic: Thomas Piketty has learned a thing or two about capitalism 74

What I Wear to Work: Live Nation's Russell Wallach is so glad he doesn't have to wear a suit and tie anymore 75

How Did I Get Here? Margaret Cho was once told she was too fat to play herself 76

COVER AND COVER TRAIL: DOMESTIC EDITION: ILLUSTRATION BY JACK SACHS; INTERNATIONAL EDITION: PHOTOGRAPH BY JUAN ARREDONDO FOR BLOOMBERG BUSINESSWEEK

Cover Trail

How the cover gets made

Domestic Cover

❶

"The story's on Microsoft and how it's investing in creating a new generation of artificial intelligence bots."

"What do these bots do, other than signal the apocalypse?"

"They can do simple tasks like order pizza or find information for you, or you can just have a conversation with them about anything you want."

"So they're basically Clippy on steroids."

International Cover

❶

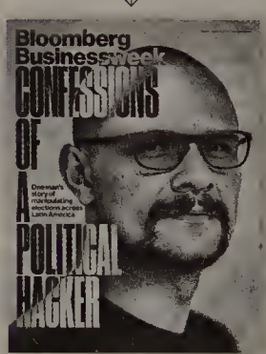
"We interviewed a hacker who's in prison for manipulating an election in South America."

"Is it bad that I feel strangely comforted—that the level of corruption in their political system at least makes ours seem not as terrible?"

"The hacker mentions that he's confident this happens here, too."

"If you need me, I'll be at the bar."

"It's 9 a.m."



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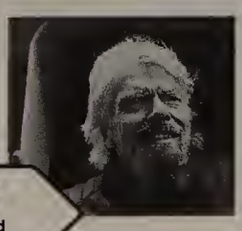
Index
People/Companies

44 Legume farmer

A
Abrams, J.J. 68
Affirm Films (SNE) 68
Airbus (AIR:FP) 23
Alaska Air Group (ALK) 23
Albert, Gail 71
Albert, Ken 71
Aleksashenko, Sergey 27
Alibaba (BABA) 36
Amazon.com (AMZN) 34, 54, 76
Anheuser-Busch InBev (BUD) 23
Aoxing Pharmaceutical (AXN) 16
Apple (AAPL) 23, 50
Aronofsky, Darren 68
Audi (NSU:GR) 20

B
Bale, Christian 68
Ballmer, Steve 50
Banca Carige (CRG:IM) 43
Barra, Mary 20
Barsamian, Ernie 14
Ben-Dov, Oded 37
Bending Branch Winery 71
Bernanke, Ben 42
Bettencourt, Liliane 74
BlackRock (BLK) 39
Blenheim Vineyards 71
BMW (BMW:GR) 20, 33
BNP Paribas (BNP:FP) 42
Boeing (BA) 23
Box 39
Branson, Richard 23
Broad Green Pictures 68
Brown, Jerry 25
Bullard, James 42



23 Richard Branson

Burnett, Mark 68
Burt's Bees (CLX) 22, 56
Bush, Jeb 26
BYD (1211:HK) 35

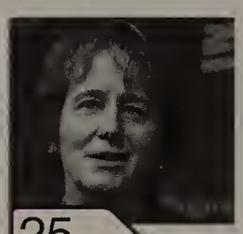
C
Caduceus Cellars 71
Cain, Dean 68
Calderón, Felipe 61
California Baby 56
Canalys 33
Carbon 33
Cho, Margaret 76
Christie, Chris 26
CIBC (CM) 36
ClearView Energy Partners 14
Clinton, Hillary 6
ClipperData 14
Clorox (CLX) 22
Cook, Tim 23
Costa Bonino, Luis 61
Credit Suisse (CS) 42
Crowe, Russell 68
Cruz, Ted 6, 26
Cuomo, Andrew 25

D
Da Silva, Luiz Inácio Lula 13
De Geer, Jacob 36
Deloitte 36
Dent, Charlie 28
DeSimone, Joseph 33
Domo 39
Dorer, Benno 22
Dorsey, Jack 36
DreamWorks Pictures 68
Dropbox 39
Dunckelman, Andrew 37
Dunn, Dan 71

E
Eastman Kodak (KODK) 33
EchoLight Studios 68
Edwards, Alexander 20
Ermoshkin, Alex 33
Errata Security 61
Euromonitor International 22
Evans, Tim 14

F
Facebook (FB) 50, 61
Faust, Jon 42
Fischer, Stanley 42
Focus Features (CMCSA) 68
Ford (F) 33
Formlabs 33
Forrester (FORR) 50
451 Group 34
Foxconn Technology (2354:TT) 43
FoxFaith (FOXA) 68
Franklin, Aretha 56
Funes, Carlos Mauricio 61

G
Gartner (IT) 34, 50
Gazprom (OGZD:LI) 27
Gear, Chip 33
General Electric (GE) 6, 43
General Motors (GM) 20
Genscape (DMGT:LN) 14
Gibson, Mel 68



25 Mary Kay Henry

Global Energy Capital 27
Gokturk, Michael 36
Goldman Sachs (GS) 40
Google (GOOG) 33, 34, 37, 50
Greene, Diane 34

H
Haeling, Karl 42
Harry, Debbie 76
Hart, Melissa Joan 68
Hartford Financial Services Group (HIG) 39
Hasbro (HAS) 21
Henry, Mary Kay 25
HI Investment & Securities 35
Hollande, François 10
Hyundai Investments 35

I
Ideal Conceal 74
Imerys Talc America (NK:FP) 56
Intuit (INTU) 36
Ivanishvili, Bidzina 42
IZettle 36

J
James, Josh 39
Jeni, Richard 76
JetBlue Airways (JBLU) 23
Jett, Joan 76
John Lewis 22
Johnson & Johnson (JNJ) 33, 56

K
Kanda, Arul 40
Kasich, John 6, 26
Keenan, Maynard James 71
Kiwoom Securities 35
Krugman, Paul 74
Kuvée 23

L
LaBelle, Patti 56
Laboratory Corp. of America (LH) 19
Landesbank Baden-Württemberg 42
Lauper, Cyndi 76
Legacy Effects 33
Leissner, Tim 40
LG (066570:KS) 35
Lionsgate (LGF) 68
Live Nation 75
Livne, Giora 37
López Obrador, Andrés Manuel 61
Lubezki, Emmanuel 68
L'Occitane (973:HK) 22

M
Macron, Emmanuel 10
Maduro, Nicolás 61
MakerBot Industries (SSYS) 33
Malakoff (MLK:MK) 40
Mara, John 19
Marriott (MAR) 43
Marvel (DIS) 68
Mathematica Policy Research 6
Matthews, Dave 71
Maynor, David 61
McCrory, Pat 23
McDowell, Loretta 71
McDowell, Mick 71
McGregor, Ewan 68
McKinsey 35
MetLife (MET) 23
Microsoft (MSFT) 34, 50
Miletta Vista Winery 71
Miller, George 27
MongoDB 39
Morgan Stanley (MS) 34
Mundipharma 16
Musk, Elon 20

N
Nadella, Satya 50
Netflix (NFLX) 68
New Line Cinema 68
Newmont Mining (NEM) 40
Newton-John, Olivia 68
Nowrasteh, Cyrus 68
NTT Data (9613:JP) 43

O
Obama, Barack 74
Olive Young 22
1Malaysia Development 40
Ortega, Daniel 61

P
Page, Carter 27
Palantir Technologies 39
Panasonic (6752:JP) 35
Paramount Pictures (VIA) 68
Payfirma 36
Petrobras (PBR) 13
Peña Nieto, Enrique 61
Piketty, Thomas 74
Porsche (VOW:GR) 20
Pure Flix Entertainment 68
Putin, Vladimir 27

Q
Quest Diagnostics (DGX) 19

R
Razak, Najib 40
Rendón, Juan José 61
Reynolds, Burt 68
Rousseff, Dilma 13
Rubio, Marco 26
Rusckowski, Steve 19

S
Saez, Emmanuel 74
Samsung (005930:KS) 35
Sanders, Bernie 6, 27, 74
SanDisk (SNDK) 43
Santorum, Rick 68
Santos, Juan Manuel 61
Schmidt, Eric 34
Schwabacher, Richard 19
Scorsese, Martin 68
Scott, Ridley 68
Sepúlveda, Andrés 61
Sequoia Capital 33
Sesame Enable 37
Sharp (6753:JP) 43
Sheets, Jeff 68
Shelburne Vineyard 71
Simmons, Kimora Lee 40
Slack 50
Snapchat 39
SNE Research 35
Sony (SNE) 68
Sorbo, Kevin 68
Sosa, Porfirio Lobo 61
Square (SQ) 36
Starwood Hotels & Resorts Worldwide (HOT) 43
Strategic Vision 20
Sudjiono, Timan 40
SunEdison (SUNE) 23
Syed Mokhtar, Al-Bukhary 40

T
T. Rowe Price (TROW) 39
Table Mountain Vineyards 71
Tank Tiger 14
Tarantino, Quentin 76
Target (TGT) 22
Technology House 33
Tesla (TSLA) 20, 35
Thiam, Tidjane 42
Toyota (TM) 20
Trump, Donald 6, 26, 27, 30, 61
Tucci, Joe 34
20th Century Fox (FOX) 68
Twitter (TWTR) 36, 50, 61

U
Uber Technologies 39
Under Armour (UA) 19
Uribe, Alvaro 61

V
Valeant (VRX) 56
Vanguard Group Vericimetry U.S. Small Cap Value Fund (VYSVX) 39
Vilanch, Bruce 76
Virgin America (VA) 23
VMware (EMC) 34
Vázquez Mota, Josefina 61

W
Wagner, Dan 36
Wallach, Russell 75
Walmart (WMT) 22
Walt Disney (DIS) 68
Warner Bros. (TWX) 68
Wedbush Securities 36
Weinstein Co. 68
Welch, Jack 6
Weleda (WELEDA:SW) 22
Western Digital (WDC) 43
WeWork 39
WhatsApp 16
Whistler Blackcomb (WB:CN) 23
White, David A.R. 68
Wohlers Associates 33
Wohlers, Terry 33
Wong, Chen 40
World Triathlon 19

Y
Yahoo! (YHOO) 36
Yellen, Janet 42

Z
Zellweger, Renée 68
Zhenjiang Yue 16
Zimmerer, Amie 71
Zimmerer, Patrick 71
Zucman, Gabriel 74

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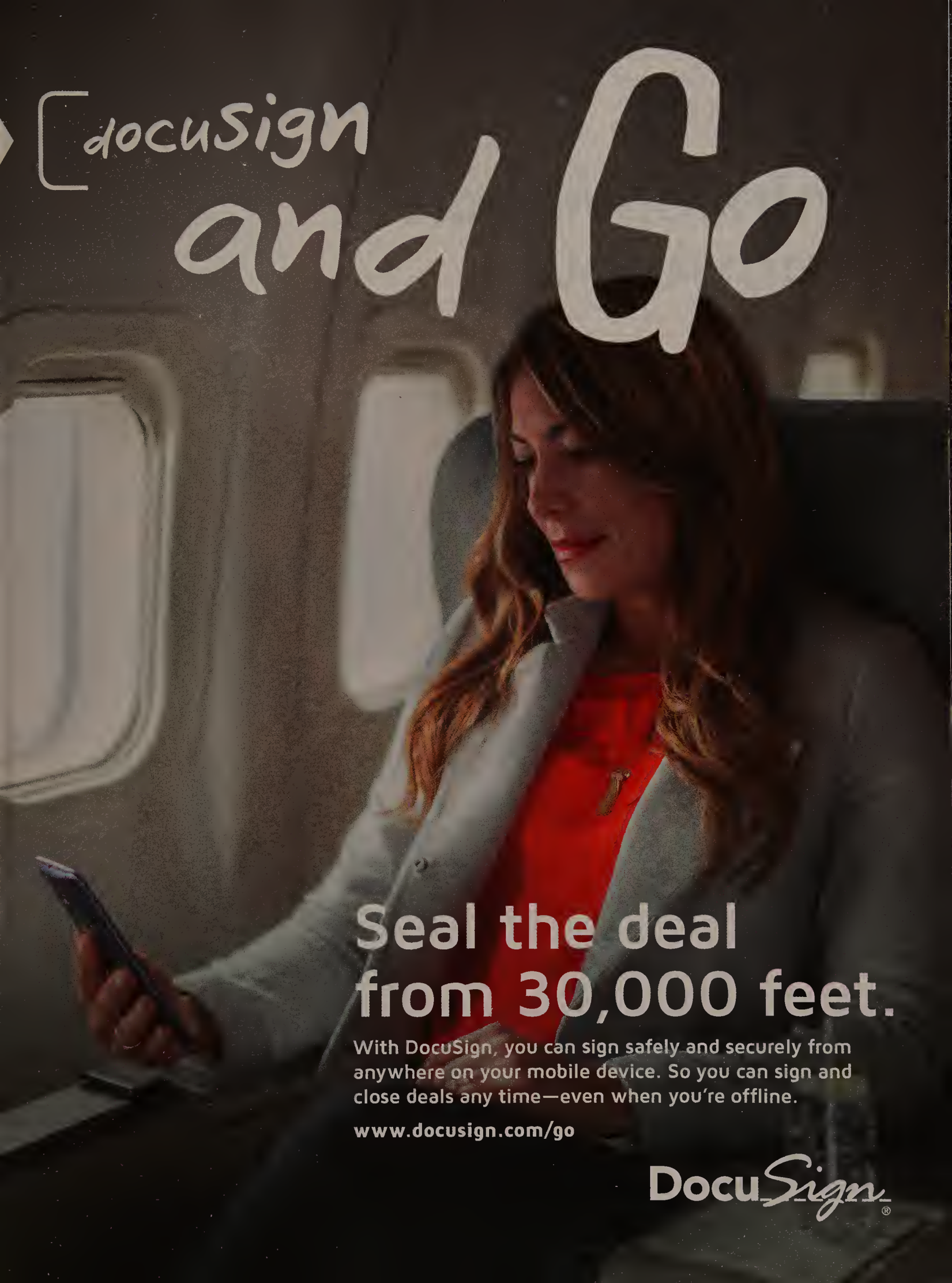
Corrections & Clarifications
"The Incredible Rise and Final Hours of Aubrey McClendon" (Features, March 14-March 20, 2016) incorrectly stated that KKR invested in American Energy Partners.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An Inconvenient Truth About...

By Peter Coy

Proponents shouldn't ignore the fact that workers are harmed by low-wage competition

It's easy to scoff at the anti-free-trade rhetoric emanating from the U.S. presidential campaign trail. Donald Trump keeps yelling about China, Mexico, and Japan. Bernie Sanders won't stop shouting about greedy multinational corporations. Hillary Clinton, Ted Cruz, and John Kasich are awkwardly leaning in the same direction. If you're a typical pro-trade business executive, you're tempted to ask: Were these people throwing Frisbees on the quad during Econ 101? A recent article in the *National Review* expressed disdain by blaming a swath of America for its own problems, attributing Trump's success to a "white American underclass" that's "in thrall to a vicious, selfish culture whose main products are misery and used heroin needles."

Wait. Trump and Sanders may be clumsy and overly dramatic, and their solutions may be misbegotten, but they're on to something real. New research confirms what a lot of ordinary people have been saying all along, which is that free trade, while good overall, harms workers who are exposed to low-wage competition from abroad. Ignoring this damage—or pretending that it's being cured through "redistribution" of gains—undermines the credibility of free traders and makes it harder to win trade liberalization deals.

"Economists, for whatever odd reason, tend to close ranks when they talk about trade in public" for fear of giving ammunition to protectionists, says Dani Rodrik, an economist at Harvard's Kennedy School of Government. "There's a sense that it will feed the barbarians."

The theory of comparative advantage that's taught to college freshmen is impossibly clean: It's all about specialization. England trades its cloth for Portugal's wine. Even if Portugal is slightly better at producing cloth than England is, it should focus on what it's best at, winemaking. Portuguese who lose their jobs making cloth will readily find new ones making wine. Efficiency improves. Everyone wins.

Life is more complicated. For example: In times of slack global demand, countries grab more than their fair share of the available work by boosting exports and limiting imports. Perpetual trade deficits leave one country deep in hock to another, threatening its sovereignty. Financial bubbles form when deficit countries are overwhelmed by hot money inflows. Countries restrict trade for strategic reasons, such as to nurture an infant industry, to punish a rival, or to guarantee a domestic source for sensitive military hardware and software. Nation-states may not appear in intro econ, but they call the shots in the real world.

Even setting aside geopolitics, trade creates losers as well as winners. Back in 1941, economists Wolfgang Stolper and Paul Samuelson pointed out that unskilled workers in a high-wage country

would suffer losses if that country opened up to imports from a low-wage nation. (The prestigious *American Economic Review* rejected the paper, calling it "a complete 'sell-out' " to protectionists.)

American support for free trade was strong for most of the 20th century. The Stolper-Samuelson theorem was of mainly theoretical interest because most U.S. trade was with other developed nations. Besides, economic textbooks assured students that losers from trade could be compensated with a portion of society's gains. The Trade Expansion Act of 1962 was the first of a series of measures to provide government assistance to U.S. workers who lost their jobs to foreign competition. American labor unions generally supported free trade as both a creator of jobs in the export sector and a bulwark against communism.

Competition from Japan shook some unions' and lawmakers' faith in trade. In 1981, Japanese automakers agreed to "voluntary" restraints on auto exports to the U.S. to avoid possible tariffs. A deal with Japan on memory chips followed in 1986. Among economists, though, the consensus in favor of unbridled free trade remained intact. If jobs were lost, they said, it was far more likely to be from automation than from imports. As recently as 1997, Paul Krugman wrote in the *Journal of Economic Literature* that "a country serves its own interests by pursuing free trade regardless of what other countries may do."

The rise of China did far more than Japan's ascent to soften the free-trade consensus. China's low-wage, low-price strategy swept through American industry like a plague. Hardest hit were labor-intensive industries such as apparel, shoes, furniture, toys, and electronics. From 1990 to 2010, according to Bureau of Labor Statistics data, U.S. production jobs in apparel plunged from 840,000 to 118,000. If a U.S. factory couldn't match the "China price," it lost the business. Economists have taken note. Krugman wrote in his *New York Times* column this March that while protectionism is a mistake, "the elite case for ever-freer trade, the one that the public hears, is largely a scam."

David Autor, a centrist economist at Massachusetts Institute of Technology, has carefully documented the consequences of China's rise. In a working paper released in January, Autor and two other economists conclude that imports from China killed about 2.4 million U.S. jobs from 1999 to 2011. That wouldn't have been terrible if the workers had found jobs in other sectors or other cities. But many didn't. Job growth was slow, so there were few openings. Lots of laid-off factory workers were still living off benefits a decade later, reflecting a "stunningly slow" adjustment, wrote Autor, David Dorn, of the University of Zurich, and Gordon Hanson, of the University of California at San Diego, in their paper, *The China Shock: Learning from Labor Market Adjustment to Large Changes in Trade.*

Autor says he still believes in free trade, including with China. "We don't want our work to be misconstrued." But he says their research did sensitize them to the human price that the U.S. has paid in exchange for low-priced goods from China. In terms of lost incomes and lost pride, Autor says, "the costs loom pretty large."

Once you accept the idea that some people lose from trade, the question becomes what to do about it. Ordinary Americans are conflicted. On one hand, there's a reservoir of support for foreign trade. A Gallup poll published in February found that 58 percent of Americans see it as an opportunity, vs. 33 percent who view it as a threat. On the other hand, doubts persist. A Bloomberg national poll in March found that almost two-thirds of Americans want more restrictions on imported goods and 82 percent would be willing to pay "a little bit more" for American-made goods to save jobs. Democrats in Washington state gave Sanders a big primary victory on March 26 even though the state benefits enormously from free trade; it led the nation in manufacturing exports per capita last year, according to U.S. Department of Commerce data.

There's a U.S. program for compensating people hurt by trade. It isn't effective

A 44-nation survey by Pew Research Center in 2014 found strongly positive views toward trade in developing nations, particularly Tunisia, Uganda, Vietnam, Lebanon, and Bangladesh. In contrast, half of Americans said trade destroys jobs, as did 49 percent in France, 59 percent in Italy, and 38 percent in Japan.

The libertarian position on free trade is that those who lose when barriers come down deserve nothing. They were being protected from competition; now their special deal is being taken away to save consumers money. End of story. If anything, some libertarians say, the workers should compensate consumers for the extra income they unjustly earned when the barriers were up. "Where, in short, is my check from those benefiting from protectionism?" Tim Worstall, a fellow of the U.K.'s free-market Adam Smith Institute, wrote on his personal blog in 2011.

◀ The U.S. Congress has rejected that harsh philosophy. In fiscal year 2014, the U.S. Department of Labor gave states $604 million for workers who were certified as having lost their jobs because of foreign competition. The funds cover career counseling, job training, allowances for job search and relocation, wage subsidies for older workers who get hired at lower pay, and weekly cash payments for people whose unemployment benefits are exhausted.

But trade adjustment assistance, as it's called, is hardly a cure-all. The sums are tiny in comparison with the scale of the problem, and the success rate is low. A study for the Labor Dept. in 2012 by Mathematica Policy Research, a Princeton, N.J.-based evaluation firm, concluded that partly because of the time that participants spent in training, their earnings were actually lower than those of nonparticipants.

Questions about how to share the benefits from free trade are inseparable from broad questions about social justice. Is a trade deal bad if it kills 1,000 jobs in South Carolina but creates 10,000 in desperately poor Bangladesh? Or this: Let's say social scientists figured out how to make trade adjustment assistance effective. Would it be right for government to ramp up spending on it 100-fold from current levels, so displaced workers are truly made whole, even though that's more money out of taxpayers' pockets?

Trade adjustment assistance is an awkwardly shaped government program, too broad in one respect and too narrow in another. If the objective is to right a wrong, then it's too broad in that it benefits people who lose jobs even when the foreign competition is perfectly fair. If the objective is to provide a safety net, then it's too narrow in that it covers only people harmed by trade. What about people who lose their jobs because of automation, tougher pollution controls, or changing consumer tastes? It seems unfair to treat those groups differently.

For logical consistency, the assistance needs to narrow or broaden. Harvard's Rodrik and MIT's Autor favor broadening–that is, eliminating trade adjustment assistance as a special category and putting a safety net under all workers that doesn't depend on why they lost their jobs.

A Worsening Deficit

U.S. merchandise trade balance with China

DATA: U.S. CENSUS BUREAU

A bigger idea is to stop the chronic trade deficits from occurring in the first place. There would be fewer losers from trade and less need for assistance if deficits were small and temporary. John Maynard Keynes, the great British economist, had an idea for that in 1941. His plan would have shrunk imbalances by putting much of the responsibility for adjustment on trade-surplus countries. It would have driven them to spend and import more. Keynes's plan didn't appeal to the U.S., which was generating big trade surpluses at the time, so it died. Something slightly similar has been pushed in recent years by Vladimir Masch, a Soviet-born engineer and economist who is retired from Bell Laboratories. His "compensated free trade" plan would have the U.S. impose separate annual limits on trade surpluses of each trading partner and charge the governments if the limits are exceeded. "Unbridled globalization undermines societies and is incompatible with democracy," he writes.

Trump and Sanders are right that better trade deals are part of the solution, too. Autor et al. show that China benefited hugely from entering the World Trade Organization in 2001. Yet China has managed to restrict access to its market, closing off some sectors, such as finance, while insisting that U.S. and other foreign companies transfer technology to Chinese partners in exchange for joint manufacturing deals.

As Sanders complains, new trade deals such as the Trans-Pacific Partnership and the Transatlantic Trade and Investment Partnership seem aimed more at securing the interests of multinationals than creating jobs back home. In other words, supporting trade deals doesn't automatically make a chief executive a free-trade purist. "My view is that there are barbarians on both sides of this issue," says Rodrik.

Thomas Palley, an economic policy adviser to the AFL-CIO, says multinationals are practicing "barge economics"–a moniker inspired by former General Electric CEO Jack Welch, who once said he wished he could put his factories on barges and move them to whatever country had the best conditions. With today's trade deals, says Palley, "we have given the official blessing to institutionalizing the race to the bottom that barge economics produces."

This stuff isn't easy. The Pacific and Atlantic trade deals are the product of years of painstaking negotiations. A President Trump won't be able to dictate new terms to trading partners, no matter how good a dealmaker he is. The WTO would probably strike down his threatened 45 percent tariffs on Chinese imports as an unfair trade practice. Rejecting the WTO's authority could trigger a multisided tariff war that would hurt the U.S. as well as its trading partners. What's more, "if we did China-specific sanctions, the trade would just divert to Vietnam, etc.," says Douglas Irwin, an economist and free-trade advocate at Dartmouth College.

A century ago, remarkably enough, free trade was the populist position. In 1911, *The Tariff in Our Times*, a book by the muckraking journalist Ida Tarbell, argued that high tariff walls protected capitalists, not workers. Sheltered from competition from Europe, she wrote, oligopolies could get away with selling expensive, shoddy goods in the U.S. market, harming consumers. High tariffs on wool were even keeping tuberculosis patients from getting warm woolen clothes and blankets, she wrote. She condemned congressmen who voted repeatedly for high tariffs: "We have developed a politician who encourages the most dangerous kind of citizenship a democracy can know–the panicky, grasping, idealless kind."

The world has changed a lot since then. Populists have lost their taste for free trade. But Tarbell remains correct. If the government can get over its panicky, grasping, and idealless ways and do what's right, trade can be an engine of prosperity and a weapon against entrenched economic power. B

In 1911, remarkably, free trade was the populist position. It could become so again

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India's Real and Deadly Tobacco Problem

Leaf-wrapped and string-tied *bidis*—not cigarettes—are the way locals light up

Starting in April, the government of India will require that cigarette packs be largely covered in graphic warning labels. That's smart; in other countries, such warnings have effectively pushed smokers to quit. The trouble is that cigarettes aren't India's biggest tobacco problem.

Most Indians who smoke light up a much cheaper, unfiltered product called a *bidi*: shredded tobacco wrapped in a *tendu*, or ebony, leaf and tied with a string. Popular among the poor—a pack can cost as little as 10¢—bidis in 2009 accounted for 85 percent of smoked tobacco in India. They have lower tobacco content than cigarettes, but more nicotine, tar, and carbon monoxide. Stick for stick, they're deadlier.

Yet successive governments have shied away from discouraging bidi smoking. The new law requires warning labels on only one side of bidi packs. And bidis are barely taxed. As of 2013, the excise burden on bidis barely topped 5 percent; the World Health Organization recommends 70 percent. (National excise taxes on cigarettes, at less than 40 percent of the retail price, could stand to be somewhat higher, too.) Handmade bidis are taxed even less than machine-made ones, and those made by the smallest producers are exempt altogether. This encourages a sprawling rural industry in which women roll bidis at home for little pay.

Defenders say higher taxes would make bidis unaffordable to the poorest Indians. But that's precisely how a tax would benefit public health. India has the world's second-largest population of smokers after China—more than 100 million people—and more than a million tobacco-related deaths each year. In 2011 the Ministry of Health and Family Welfare estimated that the economic cost attributable to tobacco use had reached $22.4 billion, more than the central and local governments spent on health care that year.

Yet in India, unlike in the U.S. and Europe, the number of smokers continues to grow. And fewer than 5 percent of adult smokers in India ever quit.

To get them to kick their habit, two things must change. First, bidis need to be brought out of the shadows to make them more taxable. Eliminating the distinction between handmade and machine-rolled sticks would drive production into factories, where output could be accurately measured. And tobacco growers should be required to report sales, and bidi-makers to report purchases. Unbranded bidis—which account for more than half of production—should be banned outright.

Then, taxes on bidis should be raised drastically. Studies suggest a 10 percent rise in prices could cut bidi consumption by more than 9 percent. Raising bidi taxes to 98 rupees (around $1.50) per 1,000 sticks could prevent more than 15 million premature deaths, the WHO estimates.

A Retreat for Hollande And a Loss for France

Labor unions have again flexed their muscles—and the government has once more caved

French President François Hollande recently came up with some good proposals for reforming the country's notoriously rigid labor laws. Most of them never made it into the bill presented to his cabinet on March 24. It's a lost opportunity his country will have cause to regret.

The original plan, strongly supported by Finance Minister Emmanuel Macron, wouldn't have scrapped the totemic 35-hour workweek law entirely, but it would have made life much easier for France's beleaguered employers—loosening the rules on working hours, restricting union powers, and making it easier for companies to dismiss workers they don't need. Lightening these burdens would have boosted employment and lifted the economy.

The retreat was unnecessary. French voters aren't implacably opposed to economic reform. Macron is the government's most popular politician by far. And ever since Nicolas Sarkozy was elected president in 2007 with a mandate to reform, it's been clear that there's a constituency for change. Yet protests by unions and students were enough to make the government back down.

Sooner or later, these reforms will have to be taken up again. Unions represent only about 8 percent of French employees, but their statutory role as co-managers of France's health and social security system, and as representatives of French employees (whether they're union members or not), gives them grossly disproportionate power. Layoffs, office moves, and petty management decisions are subject to their review. The rules bind companies with 50 or more workers: No wonder so many stop hiring at 49.

Hollande's earlier proposal was moderate, even to a fault. In diluting it almost to nothing, he's denied France its best chance to create jobs and boost growth. Ⓑ

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*Data accurate as of 06/30/2015.

† As of 12/31/2015, Fidelity Total Bond Fund earned 4 stars based on its risk-adjusted performance, compared to 947 share classes within its Morningstar Intermediate Term Bond category; Fidelity Intermediate Municipal Income Fund earned 3 stars based on its risk-adjusted performance, compared to 298 share classes within the Morningstar Muni National Interm category.

[1] For each fund with at least a three-year history, Morningstar calculates a Morningstar Rating™ based on a Morningstar Risk-Adjusted Return measure that accounts for variation in a fund's monthly performance (including the effects of sales charges, loads and redemption fees), placing more emphasis on downward variations and rewarding consistent performance. The top 10% of the funds in an investment category receive 5 stars, the next 22.5% receive 4 stars, the next 35% receive 3 stars, the next 22.5% receive 2 stars, and the bottom 10% receive 1 star. (Each share class is counted as a fraction of one fund within this scale and rated separately, which may cause slight variations in the distribution percentages.)

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[3] Each year, Kiplinger's Personal Finance compiles a list of their favorite no-load mutual funds. The list includes 25 funds with seasoned managers, a proven track record, and low fees. Fidelity Total Bond Fund, Fidelity Intermediate Municipal Income Fund, and Fidelity New Market Income Fund were selected.

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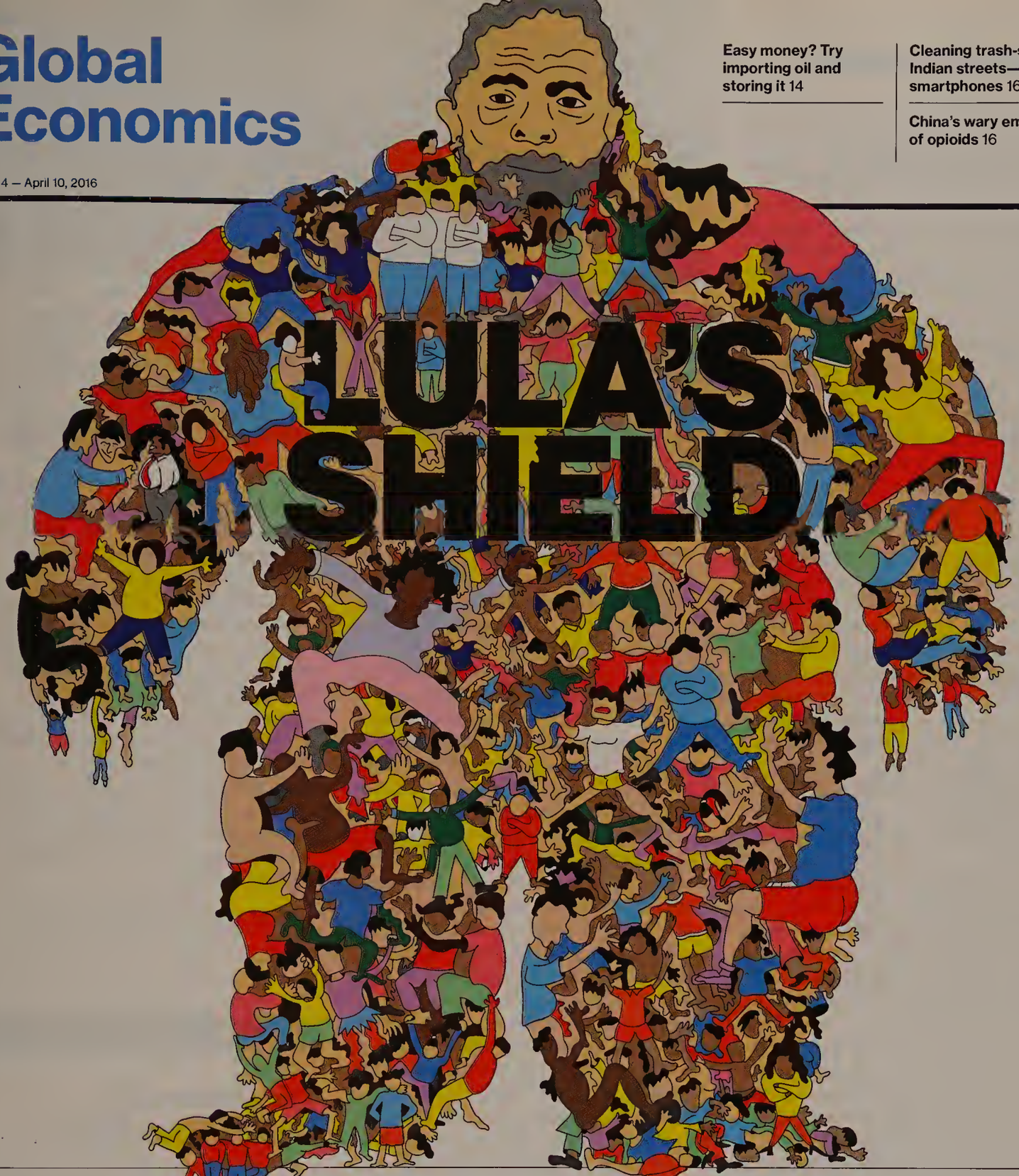
Easy money? Try importing oil and storing it 14

Cleaning trash-strewn Indian streets—with smartphones 16

China's wary embrace of opioids 16



LULA'S SHIELD

▶ Facing a judicial probe, Lula is appealing to the Brazilians who revere him—the poor

▶ "If it weren't for Lula, and Dilma after him, I'm sure I would have died of hunger"

On a hilly, scorched plot of farmland in Brazil's destitute northeast, there's a replica of the mud-and-stick-walled hut where Luiz Inácio Lula da Silva, who went on to serve two terms as president, was born. It's in places like this, where emaciated cattle graze on sun-baked scrub, that Lula and his hand-picked successor, Dilma Rousseff, are mustering their forces to fight Rousseff's impeachment and defuse multiple corruption scandals.

Lula, perhaps Brazil's most popular leader ever, spent his first seven years in the hut with his mother and six siblings. There was no electricity or running water, no proper bathroom or shoes. In 1952, the family piled onto a truck for a one-way, 13-day journey to São Paulo. Millions made this exodus south in the 20th century as government after government failed to provide enough relief from drought and hunger. Lula sold peanuts on the street, worked in factories, was jailed by dictators for leading a union, and founded the now ruling Workers' Party.

In 2002, Lula won the presidency by a landslide. He expanded welfare, credit, crop support, and housing programs for subsistence farmers and slum dwellers, as well as universities, health care, and jobs programs for their children, all on a scale never seen before. This safety net, largely maintained by Rousseff, pulled 36 million ▶

◀ people out of abject poverty, especially in the northeast.

These poorest Brazilians gave Rousseff her narrow reelection in 2014. Today, along with unionized workers and civil servants, they are a largely loyal force that Lula and Rousseff hope will help them block efforts to oust her and keep him from running for president in 2018.

In early April, Lula will visit the northeast to tell supporters that efforts to implicate him in corruption scandals and impeach Rousseff are a coup attempt. The Workers' Party is going door to door to urge Brazilians to pressure their congressmen by taking to the streets in support of the government. "This is their base, and they're trying to rally them. And it may help," says Brasilio Sallum Jr., a University of São Paulo sociology professor who published a book in 2015 on the last president to be impeached in Brazil, Fernando Collor de Mello. "But it steps up the level of social conflict, which is very worrisome." People wearing red, the Workers' Party color, have been jeered on the streets, lawmakers have scuffled in Congress, riot police have tear-gassed protesters, and the former president's Lula Institute has been vandalized.

69%

Share of Brazilians who say Dilma Rousseff's government is "bad or terrible"

The makeup of the demonstrators shows the impeachment battle is being fought along class and racial lines. In São Paulo on March 13, half a millon protesters called for the president to step down; they were 77 percent white, and more than half were considered high-income, a survey by pollster Datafolha found. Brazil is about 47 percent white, with the rest being black or of mixed ancestry. At a pro-government march in São Paulo on March 18, Rousseff drew more black and mixed-race supporters, and almost half were lower middle class or poor, a Datafolha survey shows.

Rousseff may have the poor on her side, but there are signs she's losing support within the 114 million-strong emerging middle class. Forty-four percent of them are upset that she has scaled back some of the social programs Lula started that got them to where they are, according to a recent survey by the polling firm Data Popular.

If Lula and Rousseff prevail, it will be thanks to Brazilians like Jose Erminio da Silva, whose farm is 15 miles from the former president's birthplace. "Without Lula, we would have been condemned to hunger, poverty, nothing, like everyone before us," he says. Since the early 2000s, Da Silva—no relation—has used a government credit program created by Lula to purchase 4.8 hectares of land, build a barn, and acquire about a dozen cattle. He's one of 3 million subsistence farmers who've received such financing. Da Silva says "no president has helped the poor in Brazil like Lula. Those who want to impeach the president just want to take it all away. We can't allow that to happen."

For two years, prosecutors have pursued executives and political aides on allegations that bribes paid for contracts at national oil company Petrobras were funneled into political campaigns. The investigation has engulfed both Rousseff's government and Lula, who was briefly detained four weeks ago for questioning.

In March, Congress started impeachment proceedings against Rousseff for allegedly tapping state bank coffers to mask budget deficits, in violation of the law. Rousseff, who's denied any wrongdoing, named Lula her chief of staff, entrusted with overseeing political and economic policies. The move could give him immunity from prosecution in a lower court. The Supreme Court is deciding whether to allow the appointment. A major party left Rousseff's ruling coalition on March 29, and the stock market has surged on hopes that Rousseff will soon be out of office.

According to a March 19 Datafolha poll, about 68 percent of Brazilians want Rousseff replaced. Lula has more support and not just in the northeast. In a nationwide Feb. 25 poll by São Paulo-based Datafolha, 37 percent said he was the best Brazilian president of all time.

In Caetés—whose average rural household income of 77 reais ($21) a month makes it one of Brazil's poorest spots—the opposition to Rousseff's ouster runs deep. The family of Maria de Socorro Florentino is one of 13.9 million who received Lula's cash handouts, which got paid on condition that children be vaccinated and go to school. Florentino says the cash saved them. "I remember running out of food, really running out of food when my kids were little," she says. "If it weren't for Lula, and Dilma after him, I'm sure I would have died of hunger. Maybe she wouldn't have survived," she says, pointing to her daughter.

The impeachment process might come to a vote by mid-April, but it's by no means certain, says University of São Paulo's Sallum. To make it to the senate for a trial, the motion to impeach must pass by a two-thirds majority in the fractious lower house. "That's incredibly hard to get, which is why Lula and Dilma want to get their base to pressure Congress," he says. "My big concern is what will happen if she wins? How will she govern?"

Back at the hut, one of Lula's second cousins, Eraldo Ferreira dos Santos, says the poor have too much to lose not to fight. "Before, you had no choice but to flee, flee, flee the hunger and desperation," says Santos, whose family migrated to São Paulo in 1969. "Now you have people who have what they need to stay. And that's a legacy we cannot allow to be taken from us."
—Michael Smith, with Anna Edgerton and Sabrina Valle

The bottom line The impoverished northeast region of Brazil remains a bulwark for Lula and Rousseff. It may play a role in their political survival.

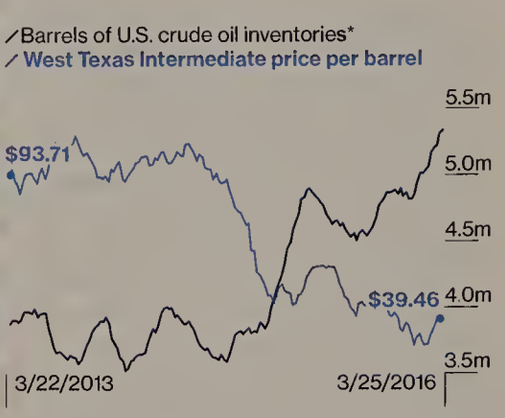
Trade

The U.S. Is a Big Oil Importer Again

- **Now that exports are allowed, the industry is hoarding foreign crude**
- **"Putting away oil is one of the few risk-free plays in the world"**

In the three months since the U.S. lifted its 40-year ban on crude oil exports, a curious thing has happened. Rather than flooding global markets, U.S. crude shipments to foreign buyers have stalled. At the same time, imports into the U.S. jumped to a three-year high in what looks to be a reversal of a yearslong decline in the amount of foreign crude

Crude oil storage tanks under construction in Nederland, Texas



*EXCLUDES STRATEGIC PETROLEUM RESERVE; DATA: U.S. ENERGY INFORMATION ADMINISTRATION, BLOOMBERG

brought into the American market.

As of March 25, the four-week average of imports was running at 7.9 million barrels a day, 9.8 percent higher than the year before. "That's not a one-week blip," says Tim Evans, an energy analyst at Citi Futures. "We're seeing a consistent pattern."

U.S. producers, who reaped the benefits of the shale revolution, no longer enjoy a steep price advantage over foreign rivals in selling to domestic refiners. Production has fallen by about 600,000 barrels a day from its peak of 9.6 million in 2015. Now refineries are buying foreign oil to replace the lost U.S. output—and, along with traders, are storing much of the less-expensive imported oil to sell when prices rise.

During the early years of the U.S. shale boom, the millions of barrels of light, sweet crude had one big problem: no affordable access to refiners on the coasts of Texas and Louisiana. To tap into the cheaper oil pooling in Oklahoma, pipelines that used to bring imported oil up from the Gulf were reversed to take shale oil down to the coast. Refiners in Philadelphia and New Jersey also began buying North Dakota crude instead of foreign oil, moving it by train across the country. By October 2014, U.S. imports had fallen by about 40 percent from a high in 2006.

Analysts say that West Texas Intermediate crude has to be $3 to $5 cheaper than imported oil to pay for those pipeline and transportation costs. From 2011 to 2014, U.S. oil was on average $12.61 cheaper than equivalent foreign oil. The discount slowly narrowed as pipeline projects were completed and U.S. crude began to flow more freely from the middle of the country down to the Gulf Coast. A week before the Senate approved lifting the export ban on Dec. 18, WTI traded around $3 below Brent. Over the next month, the discount disappeared, and, for the first time in six years, WTI traded at a premium to Brent for a few days in January. WTI is now less than a dollar cheaper than foreign barrels available on the Gulf Coast.

So refineries along the coasts are choosing to buy imports instead of WTI. One of the biggest winners is Nigeria, which is regaining lost market share. Imports from Nigeria surged to 559,000 barrels a day in mid-March, compared with an average of 52,000 for all of 2015. Refiners are also taking more heavy oil from Mexico and Venezuela. Not only is it about $9 a barrel cheaper than WTI, it's also what U.S. refineries prefer to handle.

The irony of the shale boom, and all the light crude it unlocked, is that it came just as U.S. refiners were spending billions to process heavy oil. "In theory, there was always going to be a linkage between freeing up U.S. barrels and replacing them with foreign crude that U.S. refiners are better suited to run," says Kevin Book, managing director at ClearView Energy Partners.

For some of the weakest U.S. producers with the highest costs, lifting the ban didn't matter because they can't compete on the global market, says Abudi Zein, co-founder of ClipperData, which uses customs data and ship-tracking information to estimate global oil flows. For U.S. producers with the highest costs, "they'll never be able to export because all of a sudden they're competing with Saudi Arabia and Iraq."

The U.S. is hoarding a lot of the imported oil. As of March 25, U.S. commercial crude inventories hit 534 million barrels. That's near the all-time high in 1929, when U.S. commercial storage hit 545 million barrels, as huge oil finds coincided with the beginning of the Great Depression.

Today, with oil so cheap, producers and traders are opting to wait for prices to rise instead of selling, especially with the futures market signaling that oil prices will rise. Traders can lock in those prices by taking out a contract for delivery a few months down the road. A barrel of WTI for delivery in October is about $3.50 higher than the current price of about $39. That premium has dipped in recent months, but it's still enough to pay for insurance and storage costs—with money left over.

"Putting away oil is one of the few risk-free plays in the world right now," says Philip Verleger, an energy consultant and former director of the office of energy policy at the Department of the Treasury. Fears of a lack of storage space for oil haven't come true. As of September 2015, the U.S. had 551 million barrels of working oil-storage capacity, 50 million more than it did two years before, according to government figures. Genscape, an oil-market-surveillance company, estimates that in the Midwest and the area along the Gulf Coast, the pace of construction has increased since September to about 574,000 barrels of new storage—big enough to hold a 747—a week.

The construction has helped keep leasing costs relatively low, says Ernie Barsamian, a principal at The Tank Tiger, a tank-storage broker. Average prices for a one-year lease of a storage tank run about 60¢ to 70¢ per barrel a month, he says. Barsamian estimates ▶

◀ it costs about $40 to $50 a barrel to build a storage tank and that companies that own them can make their money back in five years or so.

As long as futures prices remain higher than current ones, the incentive will remain to pump oil and store it. That leaves the U.S. stuck in a strange pattern where "the higher inventories go, the more downward pressure that puts on near-term prices, which only increases the incentive to store it," says Citi Futures' Evans. The only way to break that cycle is for interest rates to rise, says Verleger, which would increase the financing costs to build storage tanks. "As long as money is cheap, it'll make sense to build storage tanks in the U.S." —*Matthew Philips*

The bottom line U.S. oil production has fallen by about 600,000 barrels a day since peaking in 2015, and imports have filled the gap.

Environment

India Taps Social Media To Take Out the Trash

▶ **Ordinary citizens use camera phones to report illegal garbage**

▶ **"Our cities are very large, and most... are short-staffed"**

A concerned citizen in a large Indian city takes a picture with her cell phone of a garbage bag, brimming with refuse and illegally dumped on the street. She then sends it to the garbage police by using **WhatsApp**. Khaki-clad cops jump in their vehicles, rush over, find the violator, and order a cleanup. If the culprit isn't present, a municipal crew does the job. City officials fine the offenders if they can find them and maybe reward the whistleblower as well.

That's what's happening in some of India's major municipalities. "Technology-driven initiatives such as this WhatsApp helpline can help build a bridge between the city authorities and the citizens," says Babasaheb Rajale, who was deputy municipal commissioner in charge of solid waste management for Navi Mumbai (a suburb of Mumbai) and had five officers fielding garbage complaints on WhatsApp. In March he moved to another government job.

"Without citizen participation, these problems can't be solved," says Arindam Guha, a Kolkata-based partner at Deloitte Touche Tohmatsu India. "Our cities are very large, and most municipalities are short-staffed."

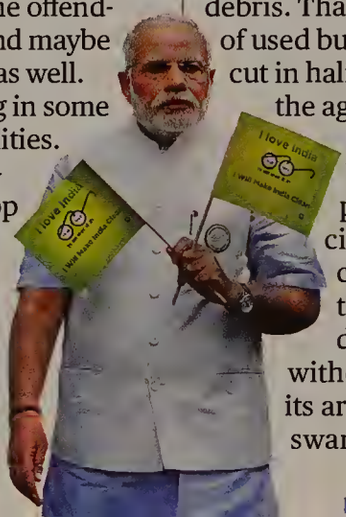
The Delhi state government launched an app called Swachh Delhi, or Clean Delhi, in November for people to upload photos of illegally dumped garbage. Another Delhi government department is seeking WhatsApp reports to stop people from burning waste to keep warm in the winter, a practice that worsens what's already the world's worst air pollution.

In Bihar, the state government is trying to clean up the capital Patna—ranked among the four dirtiest cities in India in a 2016 nationwide government survey—with Apna Patna, or My Patna app, which allows citizens to report violations including litter, broken streetlights, flooding, dead animals, and illegal construction.

Navi Mumbai's WhatsApp initiative deploys two Nuisance Detection Squad jeeps to enforce no-littering statutes from 6 a.m. to 10 p.m. and respond to WhatsApp tips—more than 300 since the program's start in January. Violators can be fined 100 rupees ($1.50) for the first offense and 250 rupees thereafter, though the culprits can't always be found, Rajale says. The relatively small fines are designed to embarrass violators into behaving more responsibly.

The program follows a similar experiment that another government agency in the city started in October to stop the dumping of construction debris. That kind of illegal scrapping of used building materials has been cut in half since then, according to the agency.

Two vehicles, called Flying Debris Squads, patrol Navi Mumbai precincts around the clock to catch truckers, mostly from the construction industry, dumping rubbish either without a permit or in off-limits areas such as the mangrove swamps that border the city. Citizens can receive a 1,000-rupee cash prize each time they report truckers violating the law, according to Ankush Chavan, a senior official at the city agency. Violators face confiscation of the truck, unless they pay a fine of as much as 30,000 rupees. More than 60 trucks have been confiscated so far, with fines totaling 1.34 million rupees. "Municipal officials can't be everywhere," says Chavan. "Why not have citizens act as our eyes and ears?" —*Bhuma Shrivastava and Anto Antony*



Prime Minister Narendra Modi has made

The bottom line Indian cities have found a new way to keep streets cleaner and construction debris contained: citizens and their cell phones.

Health

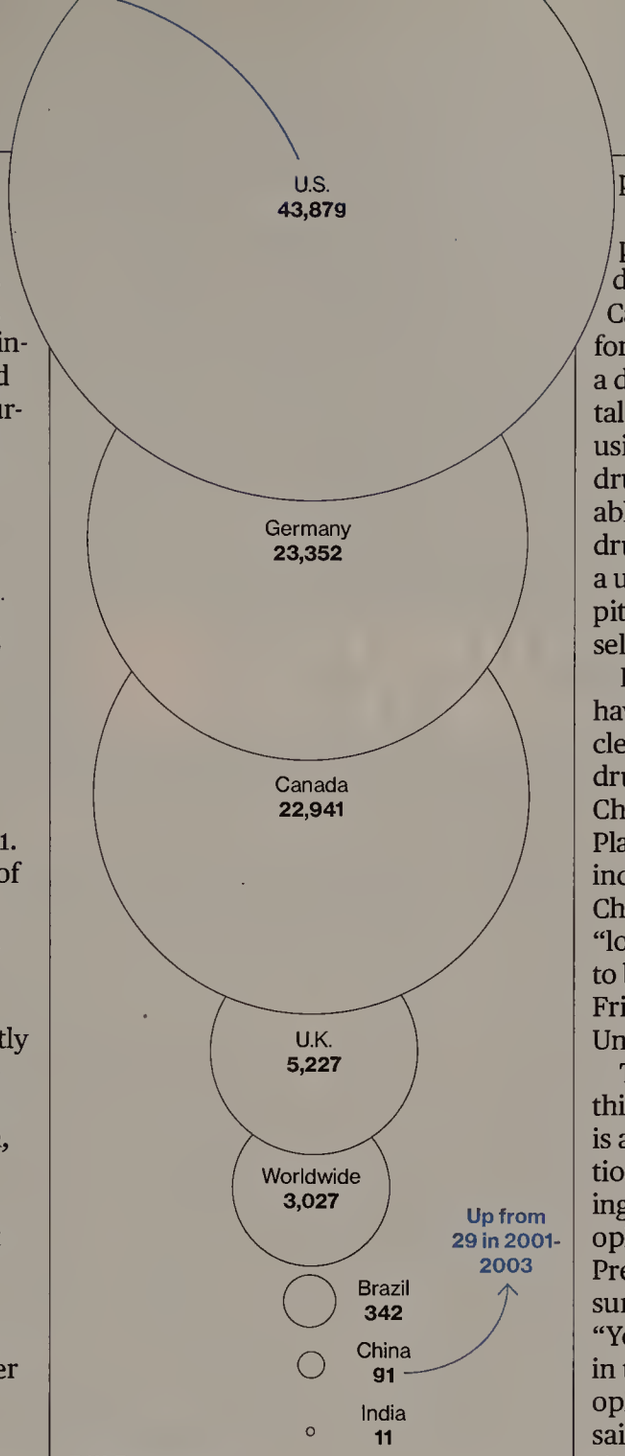
China Comes to Grips With Opioids

▶ **The painkillers work, but the Chinese worry about addiction**

▶ **After a drug bottle broke, "we... each had to write a self-criticism"**

More than most countries, China has good reason to be wary of opioids, synthetic drugs like OxyContin that share opium's power to suppress pain. In the 19th century the nation lost two wars to the British in a futile attempt to keep opium out of the country. After the defeats, part of what the Chinese call their century of humiliation, millions of people became addicted to the drug: In the early 1900s more than 25 percent of Chinese men used opium regularly. One of the government's proudest achievements after the communists took power in 1949 was wiping out "the scourge of opium," as China's State Council put it. Partly out of that historic sensitivity, China today restricts the use of opioids far more tightly than the U.S. and other Western countries.

China's aversion to opioids is part of a global puzzle: How do hospitals, health ministries, and pharma companies use these powerful painkillers effectively without laying the groundwork for serious abuse and addiction? Nobody has the answer. Instead the world's use of opioids is seriously lopsided, as the



Pill Patterns

Opioid use is starting to increase rapidly in China, but it's far more prevalent in other parts of the world. Here are the daily consumption rates* of opioid analgesics in some of the world's largest economies, adjusted for population, from 2011 to 2013.

*EXPRESSED IN DEFINED DAILY DOSES, A UN MEASURE THAT DIVIDES A NATION'S AVERAGE DAILY CONSUMPTION OF A DRUG BY ITS POPULATION IN MILLIONS AND THE AVERAGE MAINTENANCE DOSE OF THAT DRUG PER DAY; DATA: INTERNATIONAL NARCOTICS CONTROL BOARD, THE LANCET

UN-linked International Narcotics Control Board reported in February. Almost all of the world's opioids are consumed in North America, Europe, Australia, and New Zealand. The U.S., facing an epidemic of prescription painkiller abuse, consumed 43,879 defined daily doses (a standard unit for measuring drug consumption) of opiates per million people in 2011-13, while China consumed just 91.

The Chinese total was more than triple that of a decade earlier, a sign that attitudes are changing. For companies that make painkillers, China is a potential prize. The global opioids market was $34.9 billion in 2015, according to a report by Persistence Market Research, a consultant and researcher, and demand will grow 3.2 percent annually from 2015 to 2021. Chinese will use 76.86 million grams of narcotic drugs this year, according to the INCB, a fraction of the 1.36 billion grams Americans will take. When it comes to treating pain, "China has made progress, but it's still significantly behind," says Dr. James Cleary, a professor at the University of Wisconsin School of Medicine and Public Health, where he is director of the Pain & Policy Studies Group.

The government in China knows it needs to allow doctors to prescribe more painkilling drugs to patients, especially those with cancer. China accounts for 22 percent of new cancer cases worldwide, and total cancer deaths in the country increased 74 percent from 2006 to 2015. "As people's quality of life improves, they won't just suffer through the pain," says Dr. Huang Bing, a pain specialist at Jiaxing City First Hospital in Zhejiang province. "They naturally want to buy better service and pain-free health care."

The strict controls stem in part from a serious social problem. "I think it has to do with the fact that there are many drug abusers in China, and some of these people may try to obtain these injectable narcotic painkillers," says Dr. Ni Jiaxiang, director of the pain center at Beijing's Xuanwu Hospital. China had more than 3.2 million registered drug addicts in 2015, according to the official Xinhua news agency, and more than 14 million Chinese have abused narcotics at some point. The state-run media frequently publish stories about the abuse of heroin, crystal meth, and ketamine, a veterinary medicine that's used recreationally.

So, while the government is encouraging local drug companies to do more research and development on opioids, says Zhenjiang Yue, chief executive officer of **Aoxing Pharmaceutical**, the official approach to prescription painkillers "is still very restrictive." Aoxing last year received a license to make tilidine opioid tablets, a painkiller widely used in Germany.

In China, outpatients are allowed prescriptions for no more than seven days' worth of regular narcotics. Cancer patients can get prescriptions for up to 15 days but must first receive a document from a qualifying hospital certifying that they need treatment using narcotics. To keep track of the drugs, doctors who administer injectable opioids must return the empty drug vials. "Once, we accidentally broke a used bottle, and the doctor, the hospital manager, and I each had to write a self-criticism," says Ni.

Experts in the state-controlled media have been writing educational articles about the need for opium-derived drugs in pain treatment. In September, China's National Health and Family Planning Commission called for an increased focus on pain management. Chinese doctors are getting the message "loud and clear that cancer pain has to be adequately controlled," says Dr. Frieda Law, a consultant at Shantou University Medical College.

The Chinese may be doing the right thing in proceeding cautiously. Pain is a serious issue, but so is addiction to these potentially life-destroying drugs. More Americans die from opioid overdoses than traffic accidents, President Obama said in a March 29 summit on prescription drug abuse. "You see an enormous ongoing spike in the number of people who are using opioids in ways that are unhealthy," he said, "and you're seeing a significant rise in the number of people who are being killed."

Facing growing opposition from American politicians to the overprescription of opioids in the U.S., drugmakers hope changing attitudes elsewhere about pain will fuel growth in underserved countries such as China. That wish may be coming true. OxyContin maker **Mundipharma** had about $100 million in China sales last year, a 45 percent increase over 2014. At a growth rate like that, China will soon have a lot more opioids—and perhaps more problems, too.

—Bruce Einhorn and Hui Li

The bottom line Global opioid sales are $34.9 billion a year, but if China loosens its restrictions, the market will grow much more.

Edited by Christopher Power
Bloomberg.com

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Tesla is pulling into GM's lane 20

Magic fans are spellbound in D.C. 21

Burt's Bees—a bargain in the U.S., a splurge in Korea 22

Briefs: Turbulence at Boeing; Bud, the czar of beers 23

April 4 — April 10, 2016

Testing Makes Perfect

▶ Looking for a lucrative market, Quest has created a blood test for well-to-do endurance athletes

▶ "You have to wonder how much good they do that a regular screening with an internist wouldn't"

The modern amateur athlete loves data. Marathoners and triathletes devour information about their workouts, gleaning stats from sophisticated gadgets strapped to their wrists, chests, and bikes.

Richard Schwabacher wants to give them more, by going deeper inside the body. He runs **Quest Diagnostics'** Sports and Human Performance unit, the medical testing giant's effort to take a product directly to consumers. Not just any consumers, but endurance athletes willing to spend a lot of money to enhance their performance.

Take the Ironman, the popular triathlon, which asks participants to swim 2.4 miles, bike 112 miles, and then run a marathon (26.2 miles). A 2015 survey for Ironman operator World Triathlon found the average annual household income of its participants was $247,000; the median for the U.S. in 2013 was $51,939. More than half a million people in the U.S. run marathons each year.

Training for and participating in an Ironman isn't for the frugal, Schwabacher says, noting that it can run up to $15,000 a year if you buy a bike and wet suit and figure in the cost of pool time, travel and lodging, assorted gear, and massages. "If you're going to spend that much money on your sport, isn't it worth spending a couple hundred dollars to make sure the food you're eating is right?" he asks.

Quest is in the early stages of bringing a diagnostic tool called Blueprint for Athletes to those free-spenders. It's recruited what it calls ambassadors—a couple dozen hard-core weekend warriors who regularly win or place in triathlons and ultramarathons—to test the product. It's also rolled Blueprint out to consumers in endurance athlete havens including Houston, Denver, and Quest's home base in northern New Jersey.

Blueprint was born in part from an effort with the New York Giants football team, for which Quest became a sponsor in 2013. Late that year, Quest's chief executive officer, Steve ▶

◀ Rusckowski, met with Giants co-owner John Mara and the team's senior vice president for medical services, Ronnie Barnes, about collaborating. The organizations ultimately created a program to help players get faster and stronger by measuring nutrition, hydration, and food allergies using detailed blood tests. Quest and the team doctors would analyze dozens of biomarkers—for everything from albumin to lymphocytes—and offer specific advice. The results, Schwabacher says, were powerful as the athletes saw how they could change behavior and quickly improve their performance on the field by altering their workouts or diets. "The players became way more engaged," he says.

> "Not only did I feel like I'd done the work, I was prepared in the right way." —*Blueprint Ambassador Christina Ross*

Soon after the meeting, Quest started honing Blueprint for serious amateur athletes as a way to help its overall business grow. The company has 2,200 labs; it's the biggest clinical testing company in the U.S. With sales of medical tests flat and competition from companies such as **Laboratory Corp. of America**, better known as LabCorp., increasing, Quest is looking to several products to boost growth.

The consumer version of Blueprint comes in several varieties and costs $225 to $500 per test. On Blueprint's website, athletes can choose test packages designed to boost endurance, recovery, or nutrition. A clinician at a Quest location draws several vials of blood that are then analyzed. After a baseline test at the start of training, an athlete can come for follow-ups. Some get tested monthly; others check in quarterly.

Test results are reviewed by a physician, who will flag anything he or she deems critical. The athlete ultimately gets a report that can be dozens of pages long, with details on everything from vitamin D to platelet count. The report defines each biomarker and gives advice on how to combat a deficiency. For example, a high bilirubin level typically means an athlete needs to consume more iron to boost her red blood cell count.

As a weekend cyclist, Schwabacher sees endurance athletes' obsession with gadgets and data firsthand. "When I'm on my bike, I'm looking at other people's bikes and their equipment, and we're talking about it," he says. The vast majority of purchases are based on referrals. So Schwabacher's team at Quest sought out guinea pigs-cum-evangelists who'd add Blueprint to their workouts and, ideally, tell their friends about it. Over the next year, the company plans to use ambassadors' and consumers' feedback to determine which diagnostics are the most useful for specific types of athletes.

Ashley Merryman, who studied high-performance athletes for her book *Top Dog: The Science of Winning and Losing*, says for testing to be effective, athletes need to spend a lot more time and money on it. "I'm talking a daily basis," she says. Truly understanding the individual athlete is critical in helping someone stay healthy and competitive, says Dr. Norbert Sander, who practiced sports medicine for more than 20 years and is the founder and CEO of New York's Armory Foundation, which hosts dozens of indoor track meets yearly. Lab tests, he says, "have a great deal of variability. You have to wonder how much good they do that a regular screening with an internist wouldn't."

Quest, Schwabacher says, aims to create something "that's useful as one of the many tools an athlete can use in their training." The company's challenge is to effectively distill the results into actionable advice. Christina Ross, a Blueprint ambassador and a doctor in Minnesota, is a longtime triathlete who's recently taken up long-distance, single-speed mountain bike racing. "What I like is that it's science-based," she says. Ross says the testing showed her where to tweak her nutrition, adding supplements where necessary. She got tested regularly during training, including right before a race. "It didn't show evidence of overtraining. Not only did I feel like I'd done the work, I was prepared in the right way."

Kristen Heath is working on a plan to counter her hypothyroidism and low iron levels. "That's really difficult for an athlete, when they're not in line," says Heath, who lives outside Syracuse and trains for long-distance races in her spare time. She describes herself as intensely competitive and always looking for an edge. Without data, she says, "you kind of go by feel."

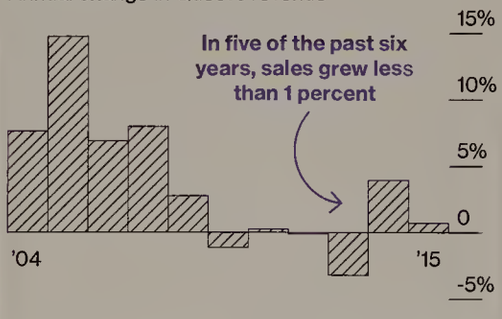
Ross and Heath will both compete on bikes in this year's Leadville 100, for which Blueprint for Athletes is the lead sponsor. The race, in the Colorado mountains, is among the most famous ultramarathons. (The "100" in the title is the number of miles competitors cover, at elevations from 9,200 feet to 12,600 feet.)

Quest in April will launch a 30-day challenge, in partnership with **Under Armour**'s MapMyFitness, through which contestants can win an entry to the fully booked Leadville bike or run. It's an easy way for Quest to identify future Blueprint customers. People nutty enough to run or ride 100 miles in the mountains are looking for all the help they can get—and willing to pay for it. —*Jason Kelly*

The bottom line Quest, whose clinical testing business is flat, has created a performance test for amateur athletes that could spur growth.

Vital Sign Weakness

Annual change in Quest's revenue



DATA COMPILED BY BLOOMBERG

Cars

Showdown at the Electric Garage

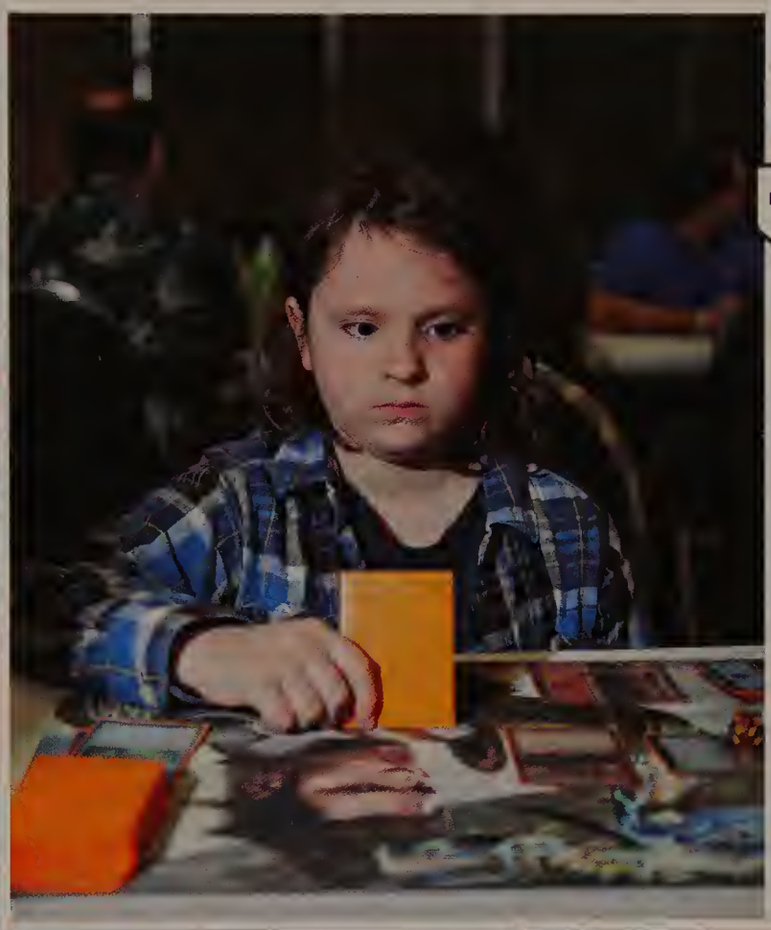
- **GM and Tesla introduce vehicles that target the same customers**
- **"Think of the Model 3 as...really competing" with BMW and Audi**

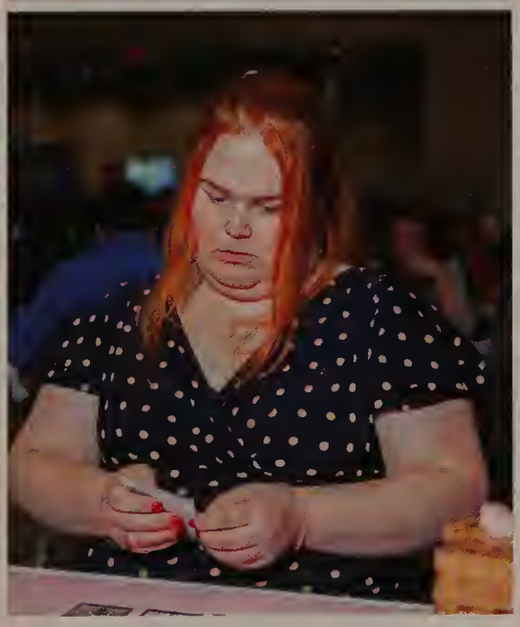
Forget about old grudge matches like Chevrolet vs. Ford or Honda vs. Toyota. The fight brewing between **General Motors** and **Tesla Motors** is shaping up to be nastier. Both will soon be going after the customer who can spend $30,000 or more on an electric car, as GM launches the ▶

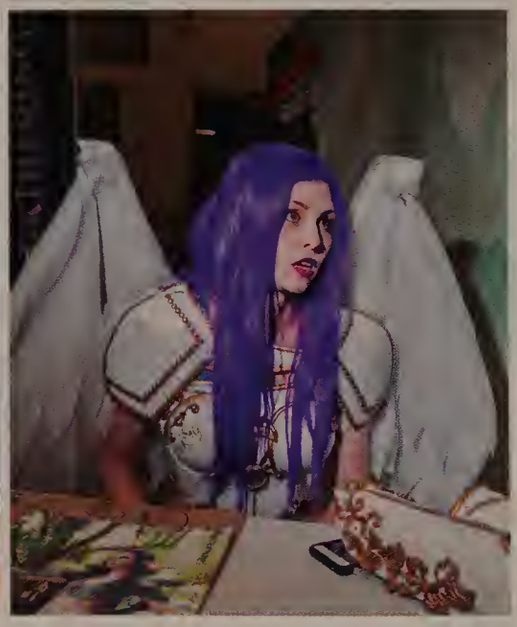
The back of the card has stayed the same since the beginning

Games Casting a Spell

Magic: The Gathering, the most popular trading-card game ever, has become a mass movement of players who battle it out with the help of spells, creatures, and other powers printed on cards at casual gatherings. The more serious planeswalkers (in Magic-speak) take part in dozens of competitions around the world. The majority are young men in their 20s, but people of all ages, backgrounds, and levels of experience play Hasbro's game. "The boring games are the ones where you just draw better cards," says Simone Aiken of Denver. "The exciting ones are when by luck and math you should have lost. That isn't probability. That's you." —*Photos by Danny Ghitis*







D.C. Grand Prix 2016

$15k
Cash prize for the first-place team at the D.C. Grand Prix

16k+
Number of unique Magic cards printed to date

4k
Number of Magic fans who attended the event

A Kingdom of Cards

1993 Magic: The Gathering is first released by games publisher Wizards of the Coast

1995 The trading-card game is printed in Italian; it's available today in 11 languages

1996 The Magic Pro Tour event is inaugurated in New York; today there are five Pro Tour events each year, plus a World Magic Cup with teams from more than 70 countries

1997 The first Magic Grand Prix opens in Amsterdam; more than 50 a year are now held worldwide

1999 Hasbro buys Wizards of the Coast

2002 A digital version, Magic Online, debuts

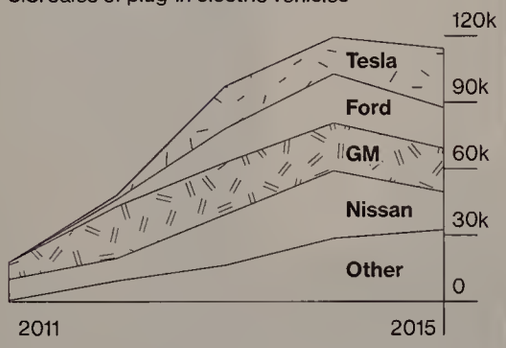
2013 Black Lotus, the most famous MTG card, sells for $27,302

2015 As Magic marks seven consecutive years of sales growth, it adds a transgender character: Alesha, Who Smiles at Death

April 8, 2016 The newest card collection, Shadows Over Innistrad, goes on sale; packs of 15 cards retail for about $4 each

Fighting for the Socket

U.S. sales of plug-in electric vehicles*



*INCLUDES VEHICLES WITH A GASOLINE-ASSIST ENGINE
DATA: U.S. DEPARTMENT OF ENERGY, HYBRIDCARS.COM

◀ Chevy Bolt at the end of this year and Tesla begins selling the Model 3 in 2017. GM showed off the Bolt in January, and Tesla unveiled the Model 3 on March 31.

GM is positioning the Bolt to sell to the masses, which will help the company meet regulatory targets for required zero-emission vehicle sales, and to highlight technology GM developed with its first electric car, the EV1, introduced in 1996. When GM stopped EV1 production in 2002, **Toyota** became the darling of green-friendly buyers with its Prius hybrid. Tesla, meanwhile, is looking to the Model 3 to prove it can sell battery-powered cars to a mass market and turn a profit.

Both cars will start at $30,000—or less after federal tax credits of $7,500 are applied. And both go at least 200 miles on a fully charged battery. The Bolt is a five-passenger hatchback that boasts cargo space and more legroom for rear passengers—front-seat backs are an inch thinner than in most cars. Tesla has kept details under wraps, but the Model 3 is expected to be about the size of a **BMW** 3 Series.

At the Consumer Electronics Show in Las Vegas in January, GM Chief Executive Officer Mary Barra, describing the Bolt's virtues, said, "Bolt customers won't have to drive to another state to buy, service, or support their vehicle." Tesla owners outside California must sometimes travel long distances for maintenance and repairs; the company has fewer than 100 stores nationwide, while Chevy has 3,000 dealers.

In February, Tesla CEO Elon Musk said he welcomes the Bolt to the market, but doesn't see it as a rival. "You should think of the Model 3 as sort of really competing in kind of the BMW 3 Series or **Audi** A4 market," he said. Musk has successfully targeted luxury brands such as Audi, BMW, and even **Porsche** with the Model S, Tesla's first full-size EV, which hit U.S. streets in 2012. It now starts at about $75,000 and can go well beyond $100,000.

Chevy will market the Bolt on its value and practical features. "Frivolous gadgets" won't cut it, says Darin Gesse, marketing manager for electrified vehicles at GM. Are the falcon-wing doors on the Tesla Model X frivolous? "They're in that neighborhood," he says. Musk has said that the doors aren't just for show; opening upward, they make it easier to get in and out of the car.

Tesla first pushed its cars as sporty and unique, and then as electric and green, says Alexander Edwards, president of San Diego marketing consultant Strategic Vision. That's why sales have increased even as cheap fuel has battered hybrid-electric cars like the Prius. Despite the companies' different marketing approaches, Edwards says, the 8 percent of new-car buyers interested in an electric car will look at both the Tesla and the Chevy models. —*David Welch*

The bottom line GM and Tesla have a lot riding on the release of their newest EVs, as both companies go after the middle market.

Cosmetics

Burt's Bees Goes From Big-Box to Upscale

- **The personal-care brand has a fancier reputation abroad**
- **In the U.S., "the positioning was not to its best interest"**

A best-selling item at the **Burt's Bees** store in Seoul's IFC Mall, a 0.6-ounce package of Res-Q ointment for cuts and scratches, sells for 18,000 won (about $15.47)—almost three times the U.S. retail price. A 113-gram tube of diaper cream goes for about $26; the average price in America is $10.

Located amid major retailers such as Armani Exchange, Jill Stuart, and Uniqlo, the store is one of 13 standalone boutiques the **Clorox**-owned brand operates outside the U.S. In Asia, where consumers place a premium on all-natural, gentle-on-the-skin beauty products, Burt's Bees has great appeal. "They're using less chemicals than some of the local brands here," says Lee Jee Ha, who shops for her Burt's Bees favorites, especially its baby oil, at any of several Seoul branches of South Korea's **Olive Young** drugstore chain. Burt's Bees is also found in upscale department stores such as the U.K.'s **John Lewis** and some drugstore chains in London.

Exported Buzz

Burt's Bees fetches higher prices abroad

Rosewater toner
In the U.S. **$11** → In Korea **$31.27**

Peach & willow bark deep pore scrub
U.S. **$8** → Hong Kong **$26.95**

Baby Bee bubble bath
U.S. **$9** → U.K. **$15.84**

At a time when large consumer-products companies are struggling with sluggish sales, Burt's Bees and the premium prices it commands overseas represent growth potential for Clorox. "This is a very profitable business internationally," says Chief Executive Officer Benno Dorer. The company, best known for its bleach and Hidden Valley ranch salad dressing, bought the small, Maine-based maker of lip balms and honey-infused creams and cosmetics for $925 million in 2007. At the time, the line was sold in five countries outside the U.S.; now it's in more than 40. It entered half of those markets in the last three years, Dorer says. The newest international

outpost opened on March 9 in Tokyo's Shinjuku neighborhood.

Initially, Burt's Bees loyalists worried Clorox would strip it of its authenticity. But the brand has held on to its all-natural cachet and grown steadily. Its co-founder, Burt Shavitz, died in July 2015, but his likeness will remain on products, the company says.

Sales have increased at least twice as fast as those for the parent company overall. Today Burt's Bees accounts for 4 percent of Clorox's sales, which last year totaled $5.7 billion. In the last fiscal year, 82 percent of total sales came from the U.S.

Dorer is looking for 10 percent to 15 percent growth in Burt's Bees' sales, compared with 3 percent to 5 percent for Clorox overall. Oru Mohiuddin, a beauty analyst at Euromonitor International in London, says competition from such brands as **L'Occitane** and **Weleda** is strong, but having baby-care products and being priced in between mass and premium brands gives Burt's Bees a niche. And there's a lot of unmet potential, she says. In the U.S., where its largest distributors are big-box retailers like **Walmart** and **Target**, "the positioning was not to its best interest," Mohiuddin says. Given its natural ingredients, she says, the company could have marketed the brand as an upscale product early on. Clorox says selling through mass retailers has driven growth.

Whether U.S. customers would spend more for the balms and lotions is unclear. Candy Leung, in Hong Kong, is happy to pay a premium. She was introduced to the products while visiting family members in the U.S. "If I need it, I buy it."

—Lauren Coleman-Lochner, with Cynthia Kim and Annie Lee

The bottom line When Clorox bought Burt's Bees for $925 million in 2007, it was sold in five countries outside the U.S. Today it's in more than 40.

Edited by Dimitra Kessenides
Bloomberg.com

Briefs

By Ira Boudway

Job Cuts at Boeing

Boeing plans to eliminate about 4,000 jobs from its commercial airplanes division by midyear as part of a broader effort to reduce costs amid strong competition from *Airbus*. The plane maker doesn't plan any involuntary layoffs for now; the reductions will come among 1,600 workers who've elected to leave under a voluntary program and through attrition. The outlook for *SunEdison* darkened as the U.S. Securities and Exchange Commission probed whether the solar-energy giant lied to investors about cash reserves. Since early 2014, SunEdison has spent $3.3 billion to acquire renewable-energy projects, taking on sizable debt to do so. *Alaska Air Group* and *JetBlue Airways* have put in bids to take over *Virgin America*, the carrier started by billionaire Richard Branson. Virgin, which started flying from San Francisco in 2007 and is now the ninth-largest airline in the U.S. by traffic, put itself on the market in March. Budweiser is enjoying unlikely growth in Russia. Overall brewing output has fallen more than 30 percent in the country since 2008, but the head of *Anheuser-Busch InBev*'s Russian unit says sales of Budweiser are growing by double digits. Made in Russia and pitched as a premium beer, it appeals to younger drinkers. *MetLife* defeated a U.S. attempt to label it too big to fail. In a sealed ruling, a federal judge rejected the Financial Stability Oversight Council's arguments for classifying America's largest life insurer as a systemically important financial institution. The designation would've put MetLife under closer government scrutiny and could have forced it to place more money in reserves.

Boston-based startup **Kuvée** began selling a Keurig-style smart bottle for $199. It keeps wine fresh for 30 days after opening and has a touchscreen to order more bottles.

23%

Increase in visitors in the final three months of 2015 vs. a year earlier at **Whistler Blackcomb**. The Vancouver-area ski resort says a snowy winter and a weak Canadian dollar brought more people to the slopes.

CEO Wisdom

"This is not a direction in which states move when they are seeking to provide successful, thriving hubs for business."

—Apple CEO Tim Cook and 89 other signatories in a letter to Governor Pat McCrory after North Carolina passed a bill rolling back protections for LGBT citizens.

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Artful deals for campaign ad airtime 26
A Trump adviser says we've got the wrong idea about Russia 27
Treasury considers cutting trucker pensions 27
A Bill: Kicking the party habit 28
Charlie Rose talks with Jack Lew 30

▶ The SEIU campaign to raise wages is working, but the union still faces an existential crisis

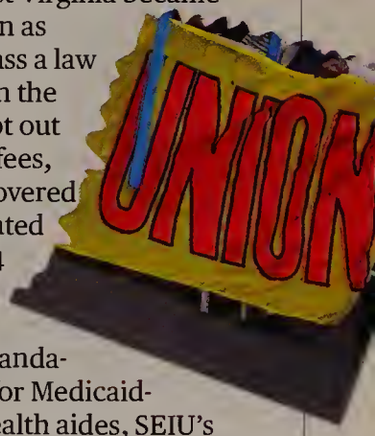
▶ "We can't survive in a world where the oxygen is being cut off"

By 2020 there will be a $15 minimum wage in effect for fast-food workers in New York City, for employees of large companies in Seattle, and for all workers in Los Angeles. On March 28, California Governor Jerry Brown announced a deal to make the $15 wage standard throughout the state by 2022. Last year, Democrats in Congress proposed making $15 the national starting wage, replacing the $7.25 federal minimum that prevails today.

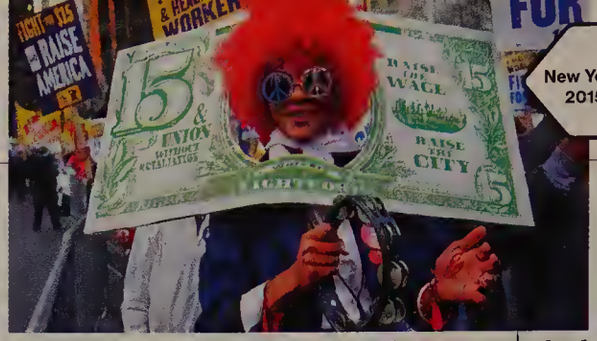
None of that would have been possible without the union-conceived Fight for $15, a four-year-old effort that's been organized labor's most effective political campaign in recent memory. "On the political level, it's definitely working," says Vincent Vernuccio, who directs labor policy for the Mackinac Center for Public Policy, a Michigan-based free-market think tank. The Fight for $15 was the brainchild of the **Service Employees International Union**, the second-largest in the U.S., many of whose 1.9 million members work for local or state government or in taxpayer-funded health-care jobs. Since 2012, SEIU has sunk millions of dollars into the Fight for $15 to pressure fast-food corporations to allow unionization, lobby elected officials to pass higher wage laws, and support worker walkouts and mass demonstrations.

SEIU's president, Mary Kay Henry, is gambling that the Fight for $15 will help save her organization, which like all U.S. unions faces serious threats to its future. Henry says increasing standards for the worst-paid workers is bolstering her members' efforts to win bigger raises. SEIU leaders also believe pressure on fast-food corporations will eventually yield a deal that covers millions of workers, improves their lives, and includes a funding mechanism for the campaign to continue—even if the result doesn't look like a traditional union. "We bargain in the way we know how," Henry says. "We're also taking risks in building a movement that's going to birth the next form of worker power."

Unions are in a weaker position today than they've been in decades. In February, West Virginia became the fourth state in as many years to pass a law letting workers in the private sector opt out of paying union fees, even if they're covered by union-negotiated contracts. A 2014 decision by the U.S. Supreme Court banned mandatory union fees for Medicaid-funded home-health aides, SEIU's fastest-growing membership group.



On March 29, the court issued a split 4-4 ruling in a case challenging ▶



New York, 2015

◀ mandatory union fees for public-sector workers covered by union contracts. The deadlock leaves rules allowing such fees intact, but other challenges have already been filed in lower courts. That means the Supreme Court may choose to revisit the question after the seat left vacant by the death of Justice Antonin Scalia is filled. Losing mandatory fees, unions say, would drive their share of the U.S. workforce below today's 11 percent, down from about one-third 50 years ago. "We can't survive in a world where the oxygen is being cut off," says Larry Hanley, president of the 190,000-member **Amalgamated Transit Union**.

Before becoming SEIU's president in 2010, Henry was head of its health-care division. Under her leadership, it successfully unionized home-health aides by getting states to treat them as public employees rather than independent contractors and cut deals with hospital chains that made it easier to add more workers to the union. As president, Henry quickly moved to persuade union leaders inside and outside SEIU that the movement was on a trajectory to oblivion unless it could find ways to bring more workers under the umbrella of organized labor. "No matter how successful SEIU will be, it cannot win in the long term unless we create a broader movement," says Eliseo Medina, SEIU's former secretary-treasurer. "That was the context."

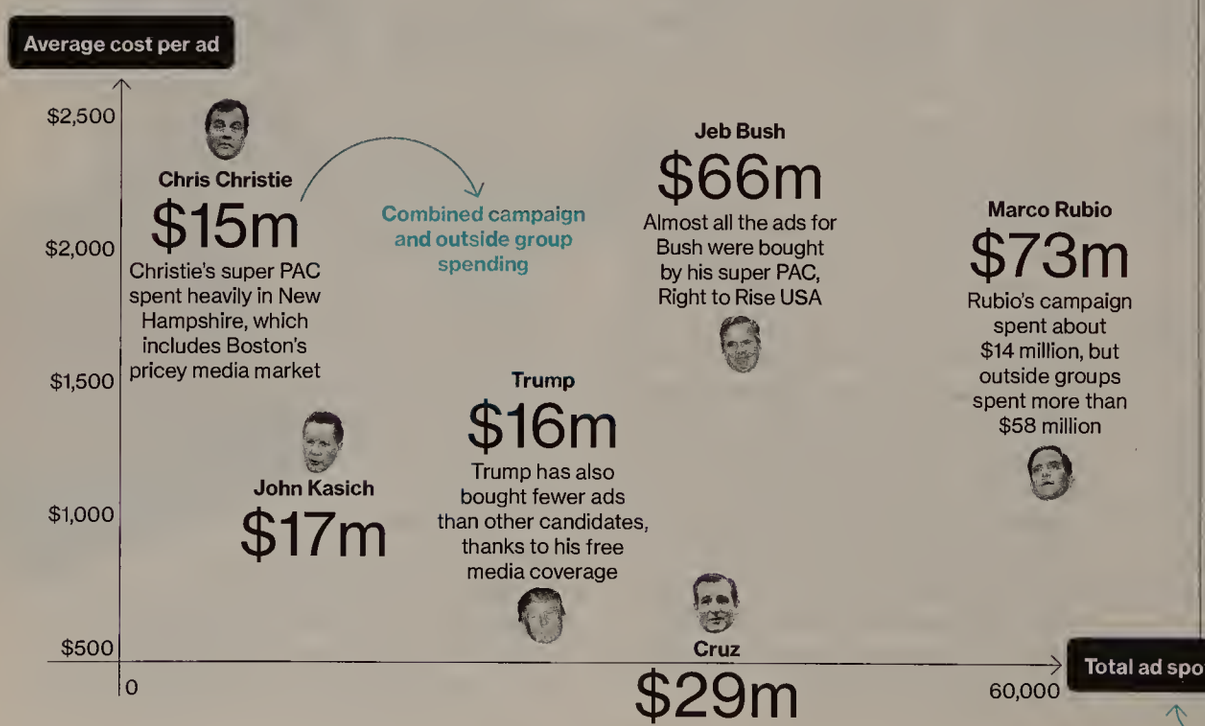
Central to Henry's solution was tethering SEIU, long a reliable source of Democratic campaign volunteers, to a public-advocacy effort against income inequality. In 2011, SEIU created what it called the Fight for a Fair Economy, which aimed at introducing wages into the national conversation before the 2012 election. "We made a decision not to make it an SEIU thing," avoiding branding the campaign with its signature violet logo, says Neal Bisno, who heads SEIU's health-care-workers union in Pennsylvania. "We literally took off our purple T-shirts." In February 2012 an internal SEIU memo outlined a plan to position unions as an answer to income inequality, in part by mobilizing fast-food workers.

While SEIU has been funding and directing the Fight for $15 from the start, local groups such as New York Communities for Change and Chicago-based Action Now served as the campaign's initial public face. Until the California deal, many of its victories were at the city level. New York Governor Andrew Cuomo is also pushing for a statewide $15 minimum for all workers.

Yet to critics, the Fight for $15 amounts to a feel-good distraction from the real problems SEIU faces. The organization, which long touted itself as America's "fastest-growing union," reported about 34,000 fewer members at the end of 2015 than in 2011. The problem, some SEIU veterans say, is how to justify the continued outlay for minimum-wage protests on behalf of nonunion workers in light of the decline in dues-paying memberships. Just as AARP relies on the money it makes in royalties from licensing insurance and other products, SEIU needs to find a funding stream to pay for its social-justice work, says Andy Stern, who preceded Henry as SEIU president. The union can't just keep transferring revenue it makes from bargaining contracts to pay for its social justice work, Stern says, "because collective bargaining is shrinking."

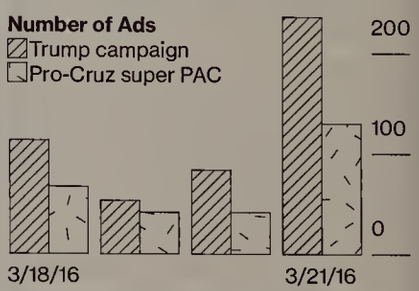
Campaign Ads More Bang for Candidates' Bucks

Under federal rules, super PACs pay market rates for TV ads, but candidates are guaranteed special lower rates. That helps Donald Trump, who spends via his campaign, while Ted Cruz and others lean on outside groups. —*Tim Higgins*



Arizona Primary

Trump bought almost twice as many ads in Phoenix as super PACs supporting Cruz did before the March 22 vote,



but Trump spent roughly two-thirds as much—

$383k

while super PACs for Cruz spent

$598k

DATA: KANTAR MEDIA/CMAG

To Henry's allies, that's an outmoded way of thinking about labor. SEIU Healthcare Illinois President Keith Kelleher says a potential model could be the New York-based **Freelancers Union**, which doesn't have collective bargaining deals with individual companies. Instead, it funds itself by taking commissions on health insurance and other services sold to its members. "If it has the power to raise wages and it contains a model for organizational resiliency and standards enforcement, does it matter?" asks David Rolf, president of the largest SEIU local in Washington state. Given the challenges unions face, Henry says, "you can't go smaller in this moment. You have to go bigger." —*Josh Eidelson*

The bottom line SEIU, the second-largest U.S. union, has won a $15 minimum wage in California but no union contracts for fast-food workers.

Election 2016

A Pro-Moscow Perspective for Trump

- **Campaign adviser Carter Page worked as a banker in Russia**
- **"There's a lot of misperceptions in the public understanding"**

In March, Carter Page traveled to a Phoenix suburb to hear Donald Trump address a rally. News reports focused on protesters who were arrested trying to block a road, but Page says all he saw was a crowd of enthusiastic supporters, many of them senior citizens, waiting in the hot sun for a chance to hear the candidate speak. He says the dissonance reminded him of what he's seen in Russia, where he's worked frequently for more than a decade. "The three protesters who blocked the road, vs. the 20,000 people who were positive and enthusiastic," he says. "There's a lot of misperceptions in the public understanding of things."

Page, 44, has spent years doing deals in Russia and Central Asia, and he has close ties to **Gazprom**, the state-run natural gas company. As a banker at **Merrill Lynch**, he helped the company on some of its largest transactions and also helped it court investors in New York and London.

Now he's among the advisers Trump recently named in interviews with the *Washington Post* and the *New York Times*. Page says his business background gives him a different perspective than "people from afar, sitting in the comfort of their think tanks in Washington." In essays, many for the British journal *Global Policy*, Page is a reliable defender of Russian intentions and characterizes U.S. positions as trapped in a Cold War mindset. That meshes with Trump's approach toward Moscow. The candidate has described Russian President Vladimir Putin as a "strong leader" and floated the idea of scaling back the U.S. commitment to NATO. "I think I would have a very good relationship with Putin," Trump said last year.

Page, a graduate of the U.S. Naval Academy, served as a research fellow to the House Armed Services Committee and worked in the Navy's nuclear affairs and international negotiations branch at the Pentagon in the early 1990s. In 1994 he earned a master's degree in national security studies from Georgetown. He started with Merrill in 2000 and helped open its Moscow office in 2004. When he left in 2007, Page says, many of Gazprom's top officials attended his going-away party.

One former Merrill banker in Russia, Bernie Sucher, says Page "has a nuanced and subtle appreciation of the interplay of politics and energy." Other former colleagues are less complimentary. Sergey Aleksashenko, a Merrill executive in Russia while Page was there and now an outspoken Kremlin critic, describes Page as a junior banker with little understanding of the country. "I could not imagine Carter as an adviser on foreign policy," Aleksashenko says.

Page says he took a buyout from Merrill Lynch in 2008 to start his own investment and advisory business, **Global Energy Capital**. Plans for a $1 billion private equity fund for investing in Turkmenistan evaporated in the financial crisis; he's mostly done advisory work, counseling foreign investors on buying assets in Russia. Page, who got an MBA from New York University while he was at Merrill, also earned a Ph.D. in Near and Mideast Studies from SOAS, University of London. He says his career as a foreign-policy expert has occasionally suffered from skepticism over his business ties to Russia and his favorable view of its leadership. "It is a question I get so frequently," he says. "There's a very negative conventional wisdom that these are all crooks and bad guys."

In some of his deals, Page has worked with Sergey Yatsenko, a former deputy chief financial officer at Gazprom. "He understands what's going on in Russia," Yatsenko says. "He doesn't make strong judgments." One project, according to Yatsenko, involved developing natural-gas-powered vehicles in Russia, possibly in partnership with Gazprom. The deal was put on hold after the U.S. and Europe imposed trade restrictions in 2014 following Russia's annexation of Crimea from Ukraine. Gazprom, led by a former Putin aide, is among the companies targeted by the sanctions. "So many people who I know and have worked with have been so adversely affected by the sanctions policy," says Page, who is also an investor in Gazprom. "There's a lot of excitement in terms of the possibilities for creating a better situation." —*Zachary Mider*

> **"There's a very negative conventional wisdom that these are all crooks and bad guys."**
> **—*Carter Page***

The bottom line A Trump foreign policy adviser worked as a banker for Merrill in Moscow and remains an investor in Gazprom.

Pensions

A Choice Between Cuts And Bankruptcy

- **Ken Feinberg will decide the fate of truckers' pensions by May 7**
- **"You cannot help but be affected by retiree after retiree"**

Every month, former truck driver Fred Allsen gets a pension payment of $2,700 from the Central States Pension Fund. That may not last much longer. By May 7 the Department of the Treasury will decide whether Allsen's payouts, and those of half the 400,000 other Teamsters in the plan, should be reduced to prevent Central States from going broke. "It would ▶

A Bill

By Sophia Pearson

So Long, Party Line Voting

H.R. 4679 People Before Party Act of 2016

The Essentials

1. In nine states, people can vote for all the candidates of one party by ticking a single box on their ballots, rather than having to mark their choices in each race. On March 3, Representative Charlie Dent, a Republican from Pennsylvania—one of the states that allows party line voting—introduced legislation to outlaw it in federal elections. "This manner of voting discourages voters from making an honest evaluation of each candidate," Dent said in a statement.

2. Republican legislators in Michigan led a successful effort to abolish straight-ticket voting earlier this year despite objections from election officials, who say the practice helps speed up lines. Three other states have eliminated it in the past two years, a trend at odds with voter behavior. "There has been an uptick in straight party voting," says Terry Madonna, a professor at Franklin & Marshall College. "With more polarization in the electorate, ticket splitting will continue to decline."

3. Dent, who proposed similar legislation in 2013, told the *Reading Eagle* that he thinks the possibility of Donald Trump headlining the Republican ticket this November is making candidates for offices further down the ballot increasingly anxious, whether they're Democrats or Republicans. "I think there could be members in both parties that would rather have voters see their names," Dent told the paper. "It's just good public policy."

Vital Statistics

Sponsor
Representative Charlie Dent (R-Pa.)
Co-sponsor
Representative Henry Cuellar (D-Texas)

Amends the Help America Vote Act of 2002, which authorized almost $3.9 billion to improve voting technology

Section 1
Short Title
p. 1

Section 2
Elimination of Straight Party Voting in Federal Elections
p. 1-2

◀ be devastating," says Allsen, 66, who spent 32 years as a trucker.

Central States was formed in 1955 to hold retirement contributions for Teamsters working for transport companies. After the industry was deregulated in 1980, almost all of the fund's 50 largest participating companies closed down or went bankrupt. Today there are more than 1,400 companies paying into the fund.

Under the proposed cuts, many of Central States' pensions wouldn't be touched, but one-sixth could be reduced by 50 percent or more. The changes are allowed under the Multiemployer Pension Reform Act of 2014. Central States says that without them, it's projected to be insolvent by 2026. Already, it pays out $3.46 for every $1 it takes in. "You have to balance that against retirees who have settled expectations, rightfully so, who are getting the rug pulled out from underneath them," says Tom Nyhan, the fund's executive director.

Whether that happens is up to Kenneth Feinberg, Treasury's special master for the pension reform program. He previously oversaw payouts for victims of the September 11 attacks. In recent months he's attended town halls in eight states with Central States beneficiaries. "You cannot help but be affected by retiree after retiree," says Feinberg. "On the other hand, there is a law that was passed, and we have to enforce the law."

The International Brotherhood of Teamsters says it would prefer to see the law replaced with a Senate bill proposed by Bernie Sanders that would allow multiemployer pensions to hand over retirees whose companies have gone bankrupt to the federal government's Pension Benefit Guaranty Corporation. Former California Democratic Representative George Miller, who co-sponsored the 2014 pension reform, says that's a nonstarter: "I don't see anything in the configuration of the Congress now, or in the near future, that's going to put up the billions of dollars to do that." —*Caleb Melby and Anders Melin*

The bottom line A 2014 law allows multiemployer pension plans to apply for government-approved benefit cuts to forestall bankruptcy.

Edited by Allison Hoffman
Bloomberg.com

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Chief Economist and Senior Associate Director
Office of Policy Analysis and Research
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The Federal Housing Finance Agency (FHFA), an independent agency in the executive branch of the federal government, is seeking to fill the position of Chief Economist and Senior Associate Director in the Office of Policy Analysis and Research in the Division of Housing Mission and Goals.

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Charlie Rose talks to...

Jack Lew

The Treasury secretary discusses the evolution of economic sanctions and the power of finance in the war on Islamic State

Give us a sense of what you believe economic sanctions have achieved.
They've evolved dramatically in the last 10 years. They started out as blunt instruments—an example is the embargo on Cuba. If you do it alone, without the support of the world, it doesn't work very well, doesn't change policy. By working systematically as a global community to put pressure on Iran, it actually changed Iran's calculus. Iran decided to come to the table, to negotiate, to back away from its work on a nuclear weapon. And we've learned how important it is, when you reach an agreement, that there has to be relief from the sanctions. Otherwise, no one will ever respond to a sanctions regime by changing their policy.

Is the work you've done on sanctions meant to provide a less risky alternative to a military response?
We've developed these economic sanctions as a way to give the current and future presidents tools to use when they confront situations that are just unacceptable. I believe military force should be the last, not the first, resort. And having options is critically important, especially when they're powerful and effective. When we talk about the use of force, we understand that it has a lot of consequences. It also has a lot of consequences when you put sanctions in place. It's a serious step.

Back to Cuba for a moment. The embargo can be removed only by Congress. Do you see any receptivity to changing that policy?
First, we've worked very much within the law to do what we can to normalize and open up. But we've made clear that without a change of law, without changing the Libertad Act, we can't make it truly normal. I'm not going to predict when Congress might do something. But I've been surprised on both sides of the aisle by a willingness on the part of many—not everyone but many—to recognize that the policy of the last 50 years hasn't worked. We're in a place now where Cuban people are going to be exposed to the American people, American values. That's going to be a force for change.

"The terrible truth about the horrible events in Brussels and Paris is, it doesn't take that much money to do things like that"

What should be on the agenda at the G-20 meeting in September—and what happened to global demand?
As we emerge from the global economic crisis that started with the financial crisis here, we've seen many economies not getting to the kind of robust levels of growth they need. As much as we want it to do better, the U.S. has actually done very well compared to the rest of the world. The truth is, for us to continue growing, against international headwinds, means that the core of the U.S. economy is actually doing even better. We're probably losing about half a percent of GDP a year due to international pressures. The real economy has been moving ahead steadily. We're seeing it in car sales. We're certainly seeing it in employment, with 14.5 million new jobs.

What kind of impact are you able to have against Islamic State?
We've cut ISIL off from the global financial community, and that's not in and of itself enough. In December, I chaired a UN Security Council meeting, and we passed a resolution to designate ISIL in the same category as al-Qaeda, which makes sanctions applicable to anyone who's an ISIL intermediary. Recently in Raqqa, an ISIL leader had to cut the pay to ISIL fighters in half. That shows you it's having an impact.

Looking at what happened in Brussels and Paris, these cells seem to have had sufficient money.
The terrible truth about the horrible events in Brussels and Paris is, it doesn't take that much money to do things like that. We work with our counterparts in Belgium, France, around Europe to make sure we share information, so that if we see where money is moving before or after events occur, we have the most sophisticated capabilities in the world. One of the challenges is, the rest of the world needs to pick up its game. We can't watch everything.

Donald Trump and other Republicans have said they would unravel the Iran deal if elected. Is that possible?
The Iran deal reflects the most progress we've made in decades. It's stopping something as dangerous as Iran developing a nuclear weapon. It's very hard, but elections matter. It's important that we continue to make the case for the importance of the Iran deal and sticking to it. Anyone who tries to reverse that is taking on something that would be destabilizing.

Watch Charlie Rose on Bloomberg TV Weeknights at 6 p.m. and 9 p.m. ET

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April 4 — April 10, 2016

An Object Rises From the Goop

This 5mm-thick, flexible polyurethane test part can withstand hammer strikes without deforming or breaking

▶ Startup Carbon has redefined what 3D printers can do

▶ "I'm trying to find out how many they can let me have this year"

In this gleaming lab in Redwood City, Calif., the first thing you notice is the burnt smell in the air. The next thing you notice is the whirring noise, from the machinery at the center of the lab cleaning objects pulled from humming rows of 5-foot-long cylindrical printers. They're turning sludgy trays of gooey resin into caramel-colored shoe soles, valves, and prototype knee replacements.

This is **Carbon**, the first company in the $4 billion 3D-printing industry to offer a serious—and seriously fast—alternative to conventional injection molds. Using new materials, hardware, and software, Carbon's printer, the M1, fires UV light at its syrupy resins to produce prototypes and production parts that can be more bouncy, stiff, tough, or heat-resistant than rival products, printing at speeds competitors can't match. Co-founder and Chief Executive Officer Joseph DeSimone gets a little flowery when the knees come out. "We don't print," he says. "We grow."

Carbon has raised more than $140 million in venture funding, 10-fold the typical 3D-printing success story, from the likes of Google Ventures and Sequoia Capital. Instead of targeting home hobbyists like **MakerBot Industries** and **Formlabs** do, Carbon has teamed up with 15 big paying customers, including **Johnson & Johnson**, **Ford**, **BMW**, and **Eastman Kodak**. Its processes haven't been around long enough to demonstrate their durability, but early clients say they're happy with the medical devices, auto parts, and other equipment they've printed with Carbon's machines. As of April 1, Carbon is making the M1 available to other businesses as part of a yearly subscription program.

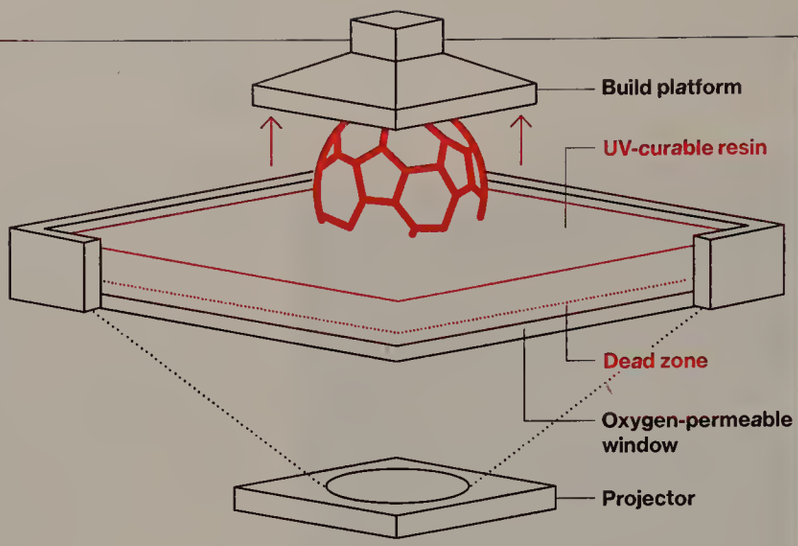
The M1 uses a projector to precisely shape the UV light it focuses on polymer gunk, hardening it into solid materials the machine then extracts from the liquid goo. The company says its approach is as much as 100 times faster than those used by rivals, depending on the object's complexity. DeSimone says the software ▶

Primordial soup

❶ A sequence of images is projected through an oxygen-permeable window into the reservoir of liquid resin.

❷ Controlling the oxygen flow through the window creates a "dead zone" of uncured resin between the window and object, providing a steady supply of material.

❸ A build platform lifts as the object grows.



◀ has a lot to do with that. Every day, each Carbon printer generates 1 million data points, precisely tracking the zaps of the UV light, the movement of the printed object, the rate of the printing, and so on. One customer was alerted to a rash of errors based on a change in room temperature.

Jason Lopes is the lead systems engineer at special effects studio **Legacy Effects**, which uses 11 kinds of 3D printers. "By default, I'm going to the Carbon machine first," he says. In three hours, the Carbon prints body armor props that take other machines more than four times as long. Ellen Lee, Ford's technical head of 3D-printing research, says Carbon's advantage is the diversity of its plastics, which allows her team to make an especially wide range of models and prototypes from a single printer.

Chip Gear, founder of an industrial manufacturing firm called **Technology House**, has been using a beta version of the Carbon printer for six months. It has cut printing time for a radio-frequency connector from 12 hours to 40 minutes, and printing eight at once takes just 43 minutes total, says Gear, adding that he bought a second printer in March and is talking with his chief financial officer about ways he can afford more. "I'm trying to find out how many they can let me have this year," he says.

> "By default, I'm going to the Carbon machine first."
> —*Jason Lopes, lead systems engineer at Legacy Effects*

DeSimone and Alex Ermoshkin, Carbon's co-founder and chief technology officer, began developing their printer technology in 2013. DeSimone is a chemistry professor at North Carolina State University and the University of North Carolina at Chapel Hill, where he and Ermoshkin worked together. They noticed most 3D-printing companies were trying to print items one layer at a time and bet they could improve the process with a continuous building technique. That year, Ermoshkin built the first prototype printer with his teenage son. By the end of 2013, Sequoia had led Carbon's first round of funding, totaling $11 million.

Sequoia partner Jim Goetz says the co-founders have laid to rest any worries that Carbon's early prototype wouldn't translate into commercial production. The next test will be getting a wider group of customers to pay for it. Carbon charges $40,000 a year to rent one of its printers and get software updates, plus an installation fee of $10,000 and $79 to $399 for every fifth of a gallon of liquid plastic. The company says it isn't profitable and declined to disclose revenue. DeSimone says he also wants to create an online marketplace where other chemists can sell their own materials for its printers.

Industry analysts warn that Carbon has yet to prove its light-forged plastics wear well. The properties of the plastics "tend to degrade over time, which is why they're not used for the manufacturing of most products that use plastics," says Terry Wohlers, president of consulting firm Wohlers Associates. Carbon's method of printing could hurt the stability and strength of its final products, says Joe Kempton, an analyst with Canalys.

Carbon's vice president for materials, Jason Rolland, says the company runs industry-standard tests and its materials "look great out to at least six months." DeSimone says his unique processes help, not hurt, the finished product, especially the way Carbon mixes its plastics from distinct components just before printing. This makes them stronger, he says, because they finish binding together after they've been hit with the UV light.

Early users Lopes and Gear say they haven't had any trouble yet. Lopes says the materials from Carbon hold up "10 times better" than those from others. None of his customers, he says, has come back with any broken parts. —*Jack Clark*

The bottom line Carbon has collected $140 million in three years to develop its superfast $40,000-a-year 3D printer.

Software

Google's Cloud Chief Aims Higher

- **The company is building data centers and recognizing mistakes**
- **"How do I find these needles in all these thousands of haystacks?"**

Google pretty much invented the technology behind the cloud. Its cloud software's AI and data analysis remain far beyond **Amazon.com**'s or **Microsoft**'s. A little surreal, then, that on March 23 Chairman Eric Schmidt had to stand on a stage in front of thousands of cloud developers and lecture them for 20 minutes about the strengths of Google's internal software and why its products deserve another look.

While Google created many of the cloud's fundamental software and data analysis tools as early as the 1990s, Amazon was the first to commercialize them a decade ago, with Amazon Web Services. Two years later, Google's sluggish response, the Google App Engine, forced clients to let it directly manage their use of computing resources instead of allowing them to rent a certain amount of space or power. (Snapchat is App Engine's only big mainstream customer.)

"There was something fundamentally wrong with my conception," Schmidt acknowledged in his March 23 remarks,

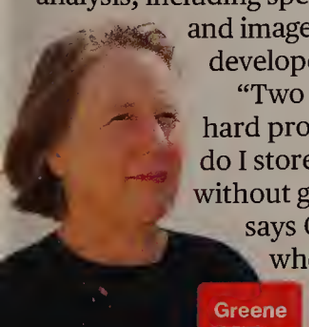
during Google's annual cloud conference in San Francisco. "We didn't give the right steppingstone."

Last year, Google made $500 million of its $80 billion in revenue from the cloud, Morgan Stanley estimates, compared with $1.1 billion in cloud revenue for Microsoft and close to $8 billion for Amazon. Researcher Gartner says the $20 billion business-cloud market could grow as much as 35 percent over the next year. In November, Google hired Diane Greene, one of its directors since 2012, to grab a bigger piece of that market. "The plan is to take all the unbelievable core strengths that Google has and fill in the gaps in how we communicate about it and deliver it," Greene says.

Google Compute Engine, announced in 2012, looks a lot more like Amazon's service. Google has been slow, however, to push it to potential clients. Greene, who spent a decade as the founding chief executive officer of cloud pioneer VMware, says that's changing: She's recruiting more marketing and sales staff, including a chief marketing officer. A person familiar with the matter says the West Coast cloud sales team has roughly doubled, to 50 people. Schmidt said on March 23 that thousands of employees will be building Google cloud tools over the next few years.

More grandly, on March 22 Google said it plans to open 12 new cloud "regions" around the world in the next 18 months, each consisting of at least one data center. Currently, Google has four; this would bring its reach roughly in line with Amazon, which has 12 such data centers operating and five more planned. To seriously compete, Google needs at least that many, says Gartner analyst Lydia Leong.

Google is working to build more of the features businesses demand into its cloud, particularly back-end stuff such as regulatory compliance monitors and advanced privacy settings. Greene says her next upgrades will focus on machine learning and data analysis, including speech-transcription and image-tagging systems developers can rent.


Greene

"Two years ago, the hard problem was: How do I store all this data without going broke?" says Greg DeMichillie, who runs cloud product management for Greene. "The question now is: How do I find these needles in all these thousands of haystacks of data?"

It's a problem Greene is familiar with from VMware, where she helped develop and sell its virtualization software, allowing one computer to do the job of many. Former lieutenants at VMware say Greene's technical acumen was superlative, and she'd often correspond directly with rank-and-file engineers about their products. She led the company through its sale to EMC and a subsequent initial public offering in 2007. (She was fired a year later by tempestuous EMC CEO Joe Tucci. The next day, VMware shares lost close to a quarter of their value.) More recently, Greene founded the secretive business-software startup Bebop, which Google bought late last year for $380 million.

Google will need to make a sustained effort to prove to businesses that its cloud products are the equal of Amazon's or Microsoft's, says Carl Brooks, an analyst with market researcher 451 Group. "They are alien technology compared to the way most enterprises run data centers," he says. For all the company's innovation, it hasn't focused enough on selling customers the things they want. "They are probably the most advanced cloud operation on the planet," Brooks says. "It also doesn't matter." —*Jack Clark*

The bottom line Google cloud chief Diane Greene is quadrupling data centers and adding features to better compete with Amazon and Microsoft.

Energy

Samsung and LG Have A Battery Problem

- **China has cut subsidies for the Korean companies' models**
- **It gives "the domestic battery makers a chance to catch up"**

The days of Korean tech companies lagging behind their rivals in Japan are long over. From smartphones to advanced screens, subsidiaries of **Samsung** and **LG** have market share that Japanese brands such as **Panasonic** should envy. One notable exception is the batteries used to power electric vehicles. Panasonic makes 36 percent of them (it's partnered with **Tesla**), compared with less than 8 percent for LG Chem and 5 percent for Samsung SDI. That's becoming a bigger deal: Worldwide demand for electric vehicles swelled 87 percent last year, to 672,000, according to SNE Research.

To increase their share of the market, LG and Samsung have been counting on demand from China, which last year made up a third of the market for electric-vehicle batteries. The Chinese government says it'll reduce smog by putting 5 million EV cars and buses on the road by 2020. Both Korean companies have been making major investments in new production facilities in China, but a change in government policy threatens to upset their plans.

672
thousand

Global demand for electric vehicles in 2015

Buses are about half the EV market in China, and the government has suspended its once-generous consumer subsidies for EV buses using batteries like the ones Samsung and LG make—a combination of nickel, cobalt, and manganese (NCM). Subsidies will continue for less-advanced lithium-iron-phosphate (LFP) batteries, according to the state news agency, Xinhua. Samsung's battery unit, which last year opened an NCM battery factory in China and plans to invest $600 million there by 2020, said in a statement that the company is "considering various ways to respond." LG's battery unit declined to comment.

Hundreds of Chinese manufacturers are now making EV batteries, with mixed results. Last year there were at least six cases of electric vehicles catching fire on Chinese roads. The government can't afford to ignore the safety issues, says Paul Gao, a McKinsey senior partner in Hong Kong. "Most of the Chinese battery players still have difficulty mastering NCM," he says. "Chinese players are not able to provide consistent quality and reliability." By contrast, Gao says, they've enjoyed success with LFP batteries, which are heavier and less powerful.

Without government subsidies, ▶

◀ which can account for as much as 40 percent of the price of an electric vehicle in China, models with NCM batteries will have more trouble finding buyers. A Chinese shift away from NCM could mean a 10 percent drop in LG's global battery sales, says Lee Dong-Wook, an analyst with HI Investment & Securities. Samsung should expect a 15 percent overall hit, says Kim Ji-San, an analyst with Kiwoom Securities. Panasonic is much less exposed, with less than 1 percent of its EV battery sales coming from China, says Simon Yu, managing director at SNE Research.

Pushing local battery producers to make their NCM designs safer should also help them become more competitive against foreign companies, says Mark Newman, a senior analyst with Bernstein Research in Hong Kong. The suspension of subsidies "is very clearly a political step from China to give the domestic battery makers a chance to catch up," Newman says.

The battery subsidies have already become a diplomatic issue between China and South Korea, threatening to overshadow the bilateral free-trade agreement the countries implemented last year. On March 19, Korea's trade ministry said the Chinese government has agreed to consider a request to continue subsidizing NCM batteries. Chun Taekmo, a chief fund manager of Hyundai Investments, says there's reason to believe China will relent, given how much more efficient a well-made NCM battery is, compared with its LFP counterpart.

Even if China does renew the subsidies, Samsung and LG have good reason to worry that the government may find other ways to promote local rivals. While the batteries of companies such as **BYD**—No. 2 in global market share behind Panasonic—aren't as advanced, Chinese technology companies have proved they can quickly make up that kind of ground. "The Korean manufacturers are very wary," says I-Chun Hsiao, an analyst with Bloomberg New Energy Finance in Tokyo. "What they are very afraid of is something similar to what happened in the solar industry, when within two or three years the Chinese caught up and Japanese and Koreans have gone bankrupt or lost market share." *—Bruce Einhorn and Heejin Kim*

The bottom line China's suspension of subsidies for Samsung and LG's type of electric-vehicle batteries could mean double-digit sales drops.

Startups

No One Wants to Be 'the Next Square' Anymore

- **Abroad, card-reader clones start to sound a little desperate**
- **"You can see that their market is actually quite limited"**

A year ago, Vancouver startup **Payfirma**'s nickname, the **Square** of Canada, was a badge of honor. Payfirma's smartphone-compatible credit card readers were in high demand, and local investors supplied $13 million in funding. Like Jack Dorsey, the chief executive officer of Square (and **Twitter**), Payfirma CEO Michael Gokturk said he was aiming for "hypergrowth." Gokturk doubled his staff to 80, including a chief operating officer formerly at **Intuit**, and started talking about an initial public offering.

Square stock price

Whoops. In November, Square went public with a market value of about $2.9 billion, less than half its private valuation from a year earlier. In the runup to the IPO, analysts began questioning whether the card-reader maker should really be priced like a highflying tech company in an era of mobile payment apps. Its stock price is hovering at about $13, right where it was after its first day of trading. Square declined to comment.

"Now that they started going through the rigors of a public market, you can see that their market is actually quite limited," says Gil Luria, an analyst at Wedbush Securities. "It's going to be much harder going forward for companies that try to emulate their model to raise capital."

At Payfirma, Gokturk says he was forced to admit that recruiting 40 people didn't help with the company's stalled U.S. expansion—or much else. "We were still doing the same results, from a sales perspective, from a revenue perspective, with a doubled staff," he says, declining to provide revenue figures. "We made the mistake of overhiring and hoping that we were going to raise more money."

Eventually, Payfirma cut 30 of its 80 employees. Afterward, Gokturk published a blog post on the company website asking Vancouver's other businesses to hire the workers who'd been

Digits

Yahoo's value rose to above **$47b** in 2014 because of its stake in Alibaba

$35.7b

Shares rose about **7%** following the news

Yahoo!'s market value on March 30, shortly after the *Wall Street Journal* reported that the company has asked potential buyers for bids on its core Web businesses

let go, including a list of names, skills, and contact information. The list has since been removed, but Gokturk says the effort helped three-quarters of his former employees find jobs.

There was no such goodwill program when the lights went out at Powa Technologies, the U.K. Square clone once valued at $2.7 billion. Powa filed for administration, the rough British equivalent of bankruptcy protection, in February. The board removed founding CEO Dan Wagner, who last year said he wanted to build the "biggest tech company in living memory." It brought in accounting firm Deloitte to consult, which resulted in 72 jobs being cut at Powa's London headquarters. In March, pieces of the company were sold off.

Swedish Square look-alike **IZettle** has shielded itself from much of the card-reader-related fallout because it avoided hype in the first place, says CEO Jacob de Geer. "We ended up with a very good European valuation, I would say, but having the same type of business in the U.S., I'm pretty sure it would have been significantly higher," he says. A person familiar with the company's private valuation pegged it at about $500 million; de Geer declined to comment.

Square has been pushing beyond card readers as it looks for ways to grow, selling add-on services such as cash advances and software tools to analyze sales data. It's also bringing in larger customers, which it said in its first post-IPO earnings statement will help it turn a profit this year.

Gokturk says Payfirma is focusing on its strategy of bundling card readers, traditional checkout-counter hardware and software, and online sales tools as a monthly subscription package, aimed at businesses slightly larger than Square's and IZettle's clients. Payfirma also has a referral deal with CIBC, one of Canada's largest banks, which helps bring in customers without having to hire salespeople. "We've extended our runway," Gokturk says, "to the point where we can now get to profitability with the cash on our balance sheet." —*Gerrit De Vynck*

The bottom line Makers of once-promising credit card readers are retrenching or outright folding after Square's disappointing IPO.

Edited by Jeff Muskus
Bloomberg.com

Innovation

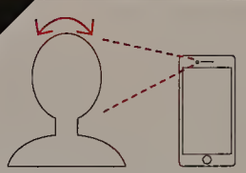
Sesame Phone

Form and function
Sesame Enable has developed smartphone software for people who have little or no use of their hands. Users manipulate the phone's screen and apps with a combination of voice commands and slight turns of their head.

Innovator Oded Ben-Dov
Age 34
Co-founder and chief executive officer of Sesame Enable, a six-employee startup in Caesarea, Israel

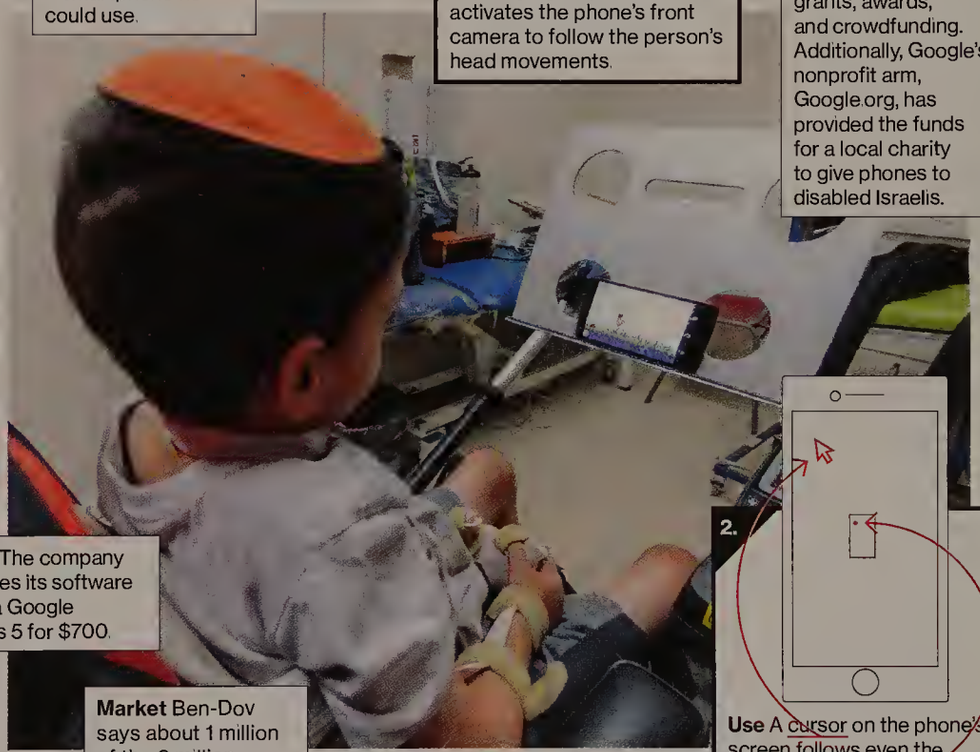
Origin in 2011, after making a mobile game that uses head gestures, Ben-Dov got a call from Giora Livne—a quadriplegic and his future co-founder—asking for help designing a smartphone he could use.

1.



Setup Initially, a caregiver places the phone in front of the user and turns it on. After that, saying, "Open Sesame" activates the phone's front camera to follow the person's head movements.

Funding Sesame Enable has secured $1.5 million in grants, awards, and crowdfunding. Additionally, Google's nonprofit arm, Google.org, has provided the funds for a local charity to give phones to disabled Israelis.



Cost The company bundles its software with a Google Nexus 5 for $700.

Market Ben-Dov says about 1 million of the 6 million people paralyzed in the U.S. have the range of head motion needed to use Sesame.

2.

Use A cursor on the phone's screen follows even the tiniest of motion a user makes, down to a couple of degrees. Leaving it hovering over an icon or a command brings up an action prompt. Voice commands can also help navigate.

Next Steps

Sesame is working on a tablet version and a downloadable app that will work with other phones. "We were drawn to Sesame first and foremost because of the quality and ease of use of its technology," says Google.org portfolio manager Andrew Dunckelman. Ruzena Bajcsy, a professor of electrical engineering and computer sciences at the University of California at Berkeley, says the technology has promise, but he wants to see it tested more thoroughly with a wider audience. —*Olga Kharif*

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Trouble for Goldman Sachs in Malaysia 40
Chinese companies wait...and wait... and wait to get paid 41
Credit Suisse slips on illiquid investments 42
One chart the Fed can do without 42
Bid/Ask: Everyone loves Starwood; cash streams to Spotify 43

April 4 — April 10, 2016

Pin the Value On the Unicorn

- Some of the biggest mutual funds disagree on the worth of startups
- Picking the right number "is as much an art as it is a science"

With hopes of getting in early on the next big initial public offering, managers at some of America's top mutual fund companies have plowed billions of dollars into **Dropbox**, **Palantir Technologies**, **Snapchat**, **Uber Technologies**, and other startups still in venture capital mode.

Now, after a year of volatile equity markets and a drop-off in IPO activity, fund companies are pulling back on making private deals. Even so, funds still have to update their estimates of what existing investments are worth. Their disclosures have become one way market watchers track the rising and falling fortunes of Silicon Valley's "unicorns"—private companies that have touched $1 billion or more in investor valuation. But putting a price on shares that aren't regularly traded is neither easy nor absolute.

"You can put three experts together and come up with three different answers," says Jeff Grabow, head of the valuation practice at consulting firm EY. "Valuation is as much an art as it is a science."

Consider the cloud storage company Dropbox. Five of its fund company shareholders had different valuations on 16 occasions, according to Bloomberg's analysis of securities filings. In December, **T. Rowe Price** set a value of $9.40 a share on its holdings. In the same month, **Hartford Financial Services Group** valued Dropbox 62 percent higher, at $15.20 a share.

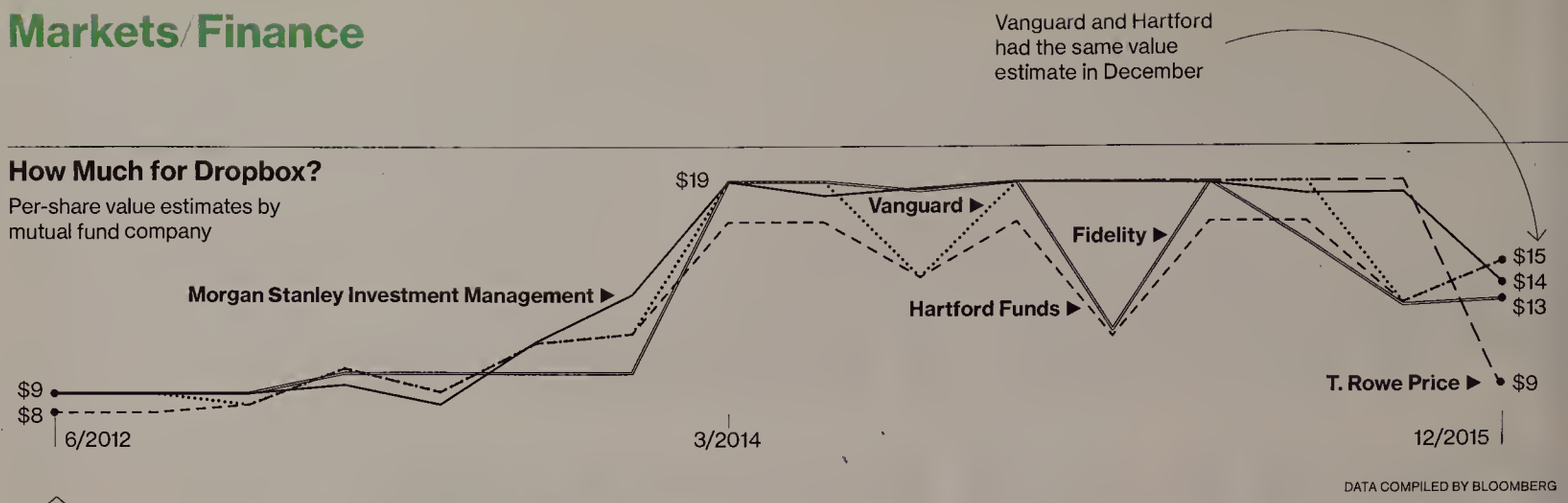
A spokesman for T. Rowe Price said a lack of disclosure rules means some investors may have more information than others. A Hartford representative declined to comment.

Private companies are a small slice of mutual fund portfolios—T. Rowe Price, for example, says in total they will never make up more than 5 percent of any one of its funds. But how managers value them does affect fund investors. Each day a fund sets a share price for itself based on the underlying value of its assets. (For a public company, that's easy: Look at the stock quote.) If a mutual fund overvalues an asset, those who sell shares get a little too much money back, diluting the value of everyone else's investment. If the asset is undervalued, new investors get to buy shares at a little too low a price.

T. Rowe Price and **Vanguard Group**, another Dropbox investor, have special pricing review committees to look at their private shares. Vanguard, like Hartford, put Dropbox at $15.20 share in December. The committee at Vanguard takes into account the valuations used by outside money managers hired by its funds, plus other data including the price of similar companies already trading on the stock market. For Dropbox, publicly traded rival **Box** might make a good comparison.

"Where comps are available, that's great; where they're less available, it's a little heavier lift," says Glenn Booraem, controller of the Vanguard funds. "Our approach has been consistent over time. However, no two of these deals are identical in terms of the valuation process that we can apply."

It's likely that fund companies also keep an eye on how their peers value the same startups, says Jay Ritter, a former trustee at ▶



◀ Vericimetry U.S. Small Cap Value Fund who teaches at the University of Florida. But money managers have limited information about their competitors' methodologies.

Valuation discrepancies also exist for **WeWork**, Snapchat, and others. In December, valuations of database software company **MongoDB** ranged from $8.06 a share to $18.55 a share.

Josh James, founder and chief executive officer of business analytics startup **Domo**, says announcements of fluctuating valuations can be distracting for employees. Domo's backers include **BlackRock**, T. Rowe Price, and **Fidelity**. In January, Fidelity marked down its valuation by 9 percent following a series of markups. Fidelity declined to comment on its process. "People that aren't experts at valuing private companies are trying to act like experts," James says. "Even when they have less information than the VCs."
—*Lizette Chapman and Drew Singer*

The bottom line Depending on which mutual fund you invested in, a share in Dropbox was worth about $10, or maybe $15.

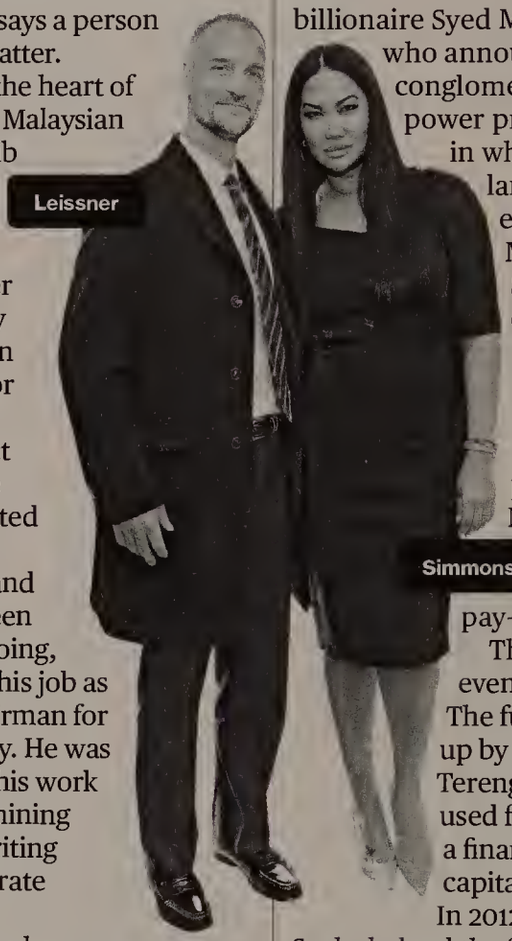
Investment Banking

The Fall of a Goldman Sachs Star in Asia

- **Lucrative deals with a Malaysian government fund bring trouble**
- **"That's a bit too cozy. A bit too overly generous"**

A former colleague describes Tim Leissner as the kind of banker who could hop in a canoe, paddle upstream, and come back with a fee. As a top executive for **Goldman Sachs** in Asia, he helped build a thriving business in Malaysia, culminating in $6.5 billion in bond sales for government-run investment fund **1Malaysia Development Berhad**, known as 1MDB. The transactions made the bank $593 million, says a person familiar with the matter.

Now, 1MDB is at the heart of a political crisis for Malaysian Prime Minister Najib Razak, who oversees the fund's advisory board. He faces questions over whether the money in the fund has been spent as intended or siphoned off. Swiss prosecutors suspect $4 billion may have been misappropriated from 1MDB.



Goldman Sachs and Leissner haven't been accused of wrongdoing, but the banker left his job as Southeast Asia chairman for the firm in February. He was under scrutiny for his work on an Indonesian mining venture, and for writing an allegedly inaccurate reference letter.

Few corporations have mastered the mix of money and power like New York-based Goldman Sachs, whose alumni have become U.S. lawmakers, Treasury secretaries, and central bankers. Leissner's rise and fall shows how lucrative—and fraught—that approach can be when the bank exports it worldwide. Leissner's lawyer, Jonathan Cogan, didn't respond to messages. Edward Naylor, a spokesman for Goldman Sachs, declined to comment.

Leissner joined Goldman Sachs in 1998, becoming chief of staff to the president of the firm's Asia operations and later head of investment banking in Singapore. He showed a talent for making impressive contacts. In May 2006 he was sitting onstage at a news conference with Malaysian billionaire Syed Mokhtar Al-Bukhary, who announced that his conglomerate was taking over power producer **Malakoff** in what it called "the largest acquisition ever undertaken in Malaysia." Goldman Sachs was an adviser on the transaction. That year, Leissner made partner. The firm later helped manage the initial public offerings of Malaysia's biggest wireless operator and largest pay-TV broadcaster.

The 1MDB deals were even more remarkable. The fund, originally set up by Malaysia's oil-rich Terengganu state, was to be used for projects including a financial center for the capital city Kuala Lumpur. In 2012 and 2013, Goldman Sachs helped the fund borrow billions of dollars via three bond sales. Leissner was an adviser to the fund early on, according to a former colleague familiar with the sales. The $593 million Goldman Sachs made dwarfed what banks typically make from government debt deals.

"There were large requirements, and Goldman was one of the few firms, in fact the only firm, that could provide the solution that was required," says Arul Kanda, president of 1MDB. "Overall, the objectives were met." He wouldn't comment on Leissner. The bank said last year that

fees and commissions reflected the risks it assumed.

Leissner at one point recommended that the firm hire the daughter of a close aide to Prime Minister Najib, according to the *Wall Street Journal*. In 2013, at an event in San Francisco, Leissner posed for a photo with the leader and Kimora Lee Simmons, who is now Leissner's wife. Simmons, a model and fashion designer who was previously married to music mogul Russell Simmons, posted the picture to her Twitter feed, which has 1.6 million followers.

"There's no law against bankers meeting with heads of state," says Wong Chen, an opposition member of Malaysia's parliament. But of Goldman's relationship with 1MDB, he says, "That's a bit too cozy, a bit too generous."

Last year, investigators probed hundreds of millions of dollars that showed up in the prime minister's bank accounts. "I am not a thief," Najib said in July. The attorney general Najib appointed last year cleared him of wrongdoing, and said in January that the prime minister got $681 million as a gift from Saudi Arabia's royal family. He said $620 million was returned. That same month, Swiss prosecutors asked Malaysia for help investigating 1MDB over the billions of dollars they suspected had been misappropriated. The Swiss said the inquiry wasn't focused on Najib. A spokesman for Najib declined to comment for this story.

U.S. authorities are exploring whether Goldman Sachs misled 1MDB bondholders or broke anticorruption laws, the *Journal* has reported. The U.S. Department of Justice subpoenaed Leissner in February, but told him he's not a target, according to a person briefed on the matter.

Goldman Sachs reviewed the bond sales and found no indication the firm or Leissner engaged in wrongdoing, two people familiar with the process say. Even so, the bank stepped up scrutiny of him after he advised a group last year trying to buy **Newmont Mining**'s Indonesian copper operations.

One investor in the project was Sudjiono Timan, former head of a government-owned Indonesian brokerage who was convicted of corruption in 2004. The conviction was overturned in 2013. Goldman Sachs told Leissner it wouldn't move ahead if Timan was a sponsor, two people familiar with the matter say. Timan withdrew, but Goldman Sachs pulled out when it learned he was still an adviser, the people say. The bank then examined Leissner's messages and found a reference letter he wrote that it said in a regulatory filing was "inaccurate and unauthorized." The filing didn't say who the letter was written to or about.

Leissner, whose father was a Volkswagen executive in Yugoslavia during the Bosnian War, graduated from Germany's University of Siegen and got an MBA from the University of Hartford in Connecticut in 1992. He was listed as "Dr. Leissner" on a program for a 2001 gathering of young Asian leaders. In a biography he provided for another forum in 2007, he said he had a doctorate in business administration from Somerset University. A school with that name offered degrees for $995, a retired federal investigator told a U.S. congressional committee on education in 2004.

Goldman's business in Malaysia, where it was one of the top banks four years ago, has fallen far. It ranked 17th for local mergers-and-acquisitions work last year, and wasn't involved in any equity or debt deals, data compiled by Bloomberg show.

The firm put Leissner on leave in January, and he resigned soon after. He moved to California, where ▶

At 131 days, industrial firms in China take the longest to convert sales into cash

It now takes about 83 days for the typical Chinese firm to collect cash for completed sales, almost twice as long as in similar emerging-market economies. Over two years, accounts receivable at Chinese public companies rose 23%, to about $590b, more than the annual economic output of Taiwan.

—By Ye Xie and Fox Hu

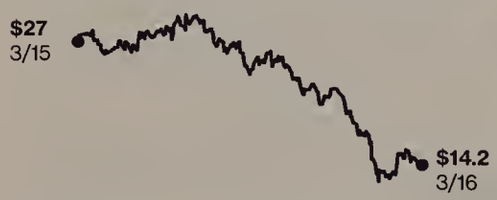
The time it takes for companies to be paid rises as China's GDP growth falls

"It's a big problem when you have rising insolvencies, a bad economic environment, and less liquidity for small companies."
—Mahamoud Islam, economist at Euler Hermes in Hong Kong

Corporate bankruptcies in China are projected by Euler Hermes to climb 20 percent this year

Banks Credit Suisse's Tough Turnaround

In October, recently hired Chief Executive Officer Tidjane Thiam proposed a plan to overhaul Credit Suisse, the second-largest Swiss bank. Investors haven't been impressed. The bank reported its biggest quarterly loss in seven years in February, and Thiam said in March another losing quarter is on the way. Over the past year, **shares are down 47 percent**,

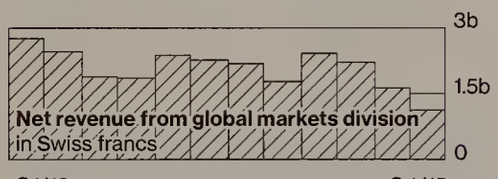


compared with 32 percent for Bloomberg's index of European banks. —*Jeffrey Voegeli*

Big Problems

❶ An unpleasant surprise
Thiam said he was caught off guard by the size of the bank's trading positions in illiquid investments, including distressed debt and leveraged loans. The investments contributed to a $346 million writedown for the year as of March 11.

❷ A shrinking trading business
Like other banks, Credit Suisse is finding it harder to make money in



the markets. Thiam has announced thousands of job cuts. He wants the bank to focus more on managing wealthy individuals' money.

❸ And then there's this...
A Credit Suisse banker in Geneva who managed money for billionaire Bidzina Ivanishvili is in jail, suspected of making unauthorized trades. Credit Suisse filed its own criminal complaint against the banker and calls this an individual case.

Thiam Told Analysts
The size of the bank's illiquid bets "was a surprise to a number of people" within the company.

◀ his wife has an $11 million mansion in Beverly Hills. Gerry David, who runs an energy drink company in which Leissner is an investor, says the banker's exit is an "opportunity to be back home with the family." —*Max Abelson and Elffie Chew*

The bottom line Goldman Sachs put together major deals for an opaque Malaysian fund linked to the controversial prime minister.

Interest Rates

The Trouble With The Dot Plot

- **The Fed wants markets to pay less attention to its own rate forecasts**
- **"I've even thought about dropping out... from the whole exercise"**

In January 2012 the Federal Reserve unveiled a new way to communicate its officials' current thinking about the direction of interest rates. Each quarter, members of the committee that sets the benchmark federal funds rate would provide anonymous forecasts of where it would go in the next few years. Each official's predictions were represented by tiny dots on a chart that quickly became known as the "dot plot." The idea was to make the Fed more transparent, but now some officials say the chart offers too much noise and not enough useful signals.

One problem: Since the forecasts come out only four times a year, they're stale as soon as any new information about the economy and inflation comes along. What's more, financial markets often disagree with the dot plot, exposing a potentially costly gap. Where investors think the Fed is going helps determine the rates on everything from government and corporate bonds to mortgages and car loans.

The dots "seldom add anything useful beyond the communication already presented by the Fed news conferences, the statement, speeches, and testimony," says Jon Faust, director of the Center for Financial Economics at Johns Hopkins University in Baltimore and a former adviser on communications to Chair Janet Yellen. "We should have all learned that they don't say where policy is going."

In March 2015 the dots predicted the federal funds rate would end the year above 0.5 percent, suggesting the central bank would put in place two quarter-point rate hikes from near zero. There's been only one.

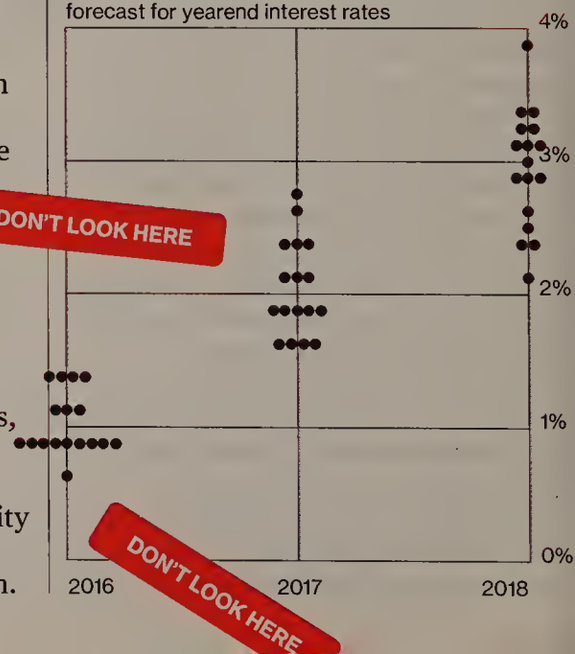
Some market participants have clearly gotten the message. When Fed officials released a fresh forecast on Dec. 16, the median of their estimates signaled four rate hikes for 2016—a sign they saw the economy steadily improving, requiring higher rates to hold back inflation. Markets were much more cautious. Traders who use financial contracts to speculate on interest rate changes put only a 9 percent probability on the Fed following through, according to data compiled by Bloomberg.

On March 29, Yellen said new risks in the global economy meant officials would have to "proceed cautiously" with further rate hikes.

Dissatisfaction with the dots seems to be growing within the Fed. St. Louis Fed President James Bullard, a voting member of the policy-setting Federal Open Market Committee, says the rate projections contribute to uncertainty. "I've even thought about dropping out unilaterally from the whole exercise," Bullard says.

Fed Vice Chairman Stanley Fischer is leading an internal subcommittee that's trying to figure out ways to tell the public the dots are at best a guess in a moment in time. One proposal,

The Predictors
Each dot represents one FOMC member's forecast for yearend interest rates



revealed in the minutes of the Fed's Jan. 26-27 meeting, is to bring in yet another shape: a fan.

A fan chart would show the range of uncertainty around a forecast, a band that would spread wider the further the forecast extends. (Hence the fan.) Another possibility discussed by academics and former Fed officials is to leave the dots as they are and focus instead on describing scenarios. There could be charts of how policymakers would respond to shocks and surprises.

This is what they're trying to communicate all the time. According to transcripts of FOMC meetings, the committee's staff already does this using a computer-generated scenario with a Fed funds rate path. "I like that idea better than a fan chart," says Laura Rosner, U.S. economist at BNP Paribas in New York. Yellen, she says, "could walk us through the scenarios in her press conference and discuss how policy might respond."

Although Johns Hopkins's Faust favors retiring the dot plot, he says it still achieves two of the big goals of former Fed Chairman Ben Bernanke, who first instituted it. Bernanke wanted all of the FOMC members, not just the chair, to be seen as authorities on policy. And he wanted those members to be more accountable. The dots provide a hint of their views and of how diverse they are.

In March, for example, one member saw the federal funds rate going up to about 2 percent by 2018. Another member saw rates rising close to 4 percent. For her part, Yellen, in 2014 at her first news conference as chair, said the public "should not look to the dot plot" as the main way the Fed communicates. She said to look instead at the central bank's official statement.

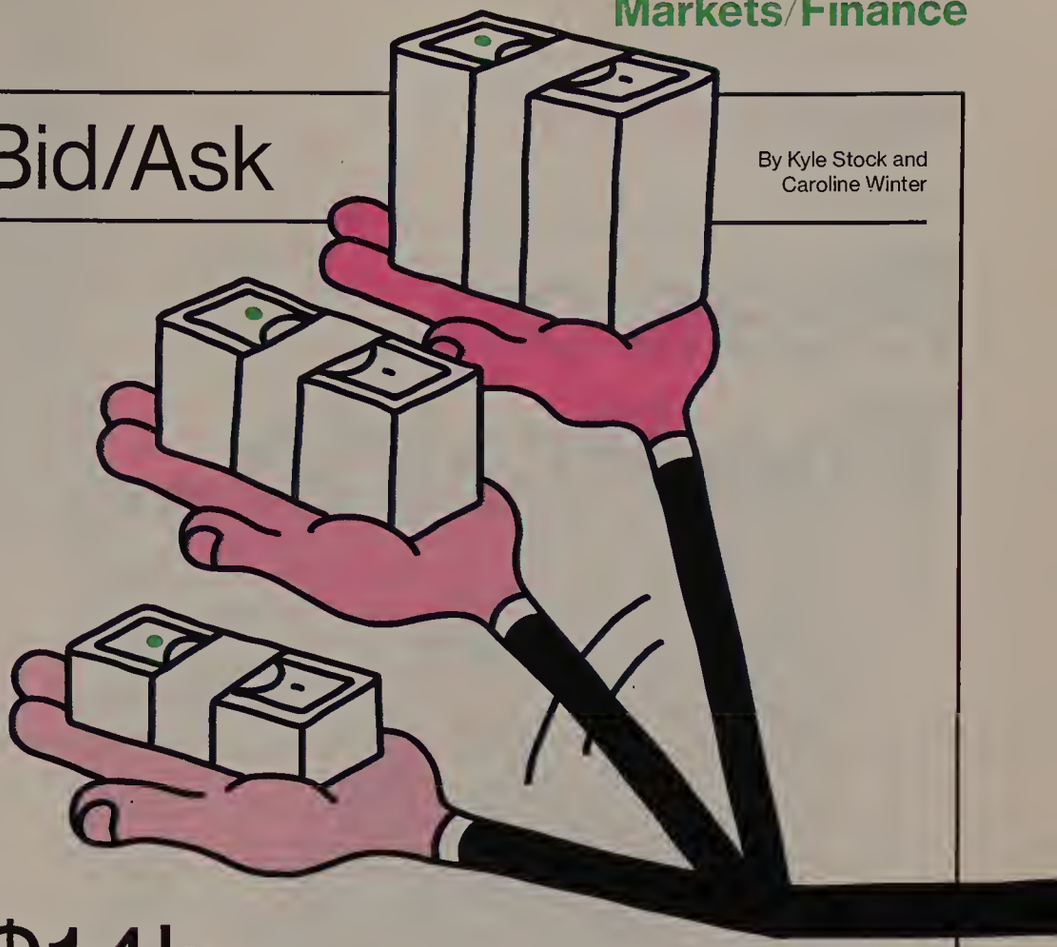
Of course, the dots may simply show the Fed has had too rosy a view about the pace of the economic recovery. "I always laughed at the dots," says Karl Haeling, head of strategic debt distribution at Landesbank Baden-Württemberg in New York. "They have always been overly optimistic." —*Craig Torres*

The bottom line Markets have noticed that Federal Reserve officials' interest rate forecasts aren't terribly accurate.

Edited by Pat Regnier
Bloomberg.com

Bid/Ask

By Kyle Stock and Caroline Winter



$14b

Anbang Insurance Group ups its offer for Starwood—again. Leading a group of investors, the Chinese company raised its bid for Starwood Hotels & Resorts Worldwide, besting Marriott International's latest counteroffer. It was the fourth bid in the battle for Westin, W Hotels, and other well-known lodging brands. The acquisition would be the biggest Chinese purchase of a U.S. company.

$5.6b **Western Digital offers junk bonds.** Proceeds from the planned sale will finance the company's takeover of SanDisk, say people with knowledge of the matter.

$3.5b **Foxconn Technology finally gets Sharp.** After years of pursuit, Foxconn won control, taking 66 percent of the electronics maker that built Japan's first television sets.

$3.1b **NTT Data buys Dell's IT services.** The acquisition provides the Japanese tech giant with 28,000 employees mainly in North America and India.

$1b **Spotify raises more cash.** The music streaming service sold convertible debt to investors including private equity firm TPG Capital, say people familiar with the deal.

$566m **Apollo Global Management eyes an Italian bank.** The investment giant is offering to buy a majority stake in Banca Carige. Capital-strapped Carige has been burdened by bad loans.

$485m **State Street buys General Electric's asset management unit.** The move gives State Street responsibility for $100 billion in assets of foundations, sovereign wealth funds, and insurers.

$100m **Betterment trades up.** Raising its fifth round of venture capital, the robo adviser was valued at $700 million, a 55 percent increase over its previous level.

In 2011, Indians ate a daily average of

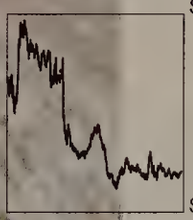
1,394

calories of grain per capita, compared with 29 calories of meat

April 4 — April 10, 2016

Peas on The Prairie...

Price of a bushel of corn



29%

Compound annual growth rate of U.S. pulse exports to India from 2005 to 2015

Destined for New Delhi

- **Indian appetites are starting to sway the U.S. crop mix**
- **"It will have a real impact on what farmers choose to grow"**

Farming on the Northern Plains is a never-ending battle to keep the soil alive and in place. Long, dry winters kill precious organisms; the ever-present wind blows dirt across the prairie. Certain crops can help, especially pulses. Legumes such as dried peas, lentils, kidney beans, and chickpeas fight erosion and replenish life-giving nitrogen, reducing the need for chemical fertilizers. That made Beau Anderson an early convert to pulses on his wheat and barley farm outside Williston, N.D., where he added them to his crop rotation more than a decade ago.

There wasn't much money in it then. Pulses are high in protein and low in fat, but Americans don't eat a lot of them. Expanding demand for corn ethanol and surging U.S. soybean exports to China helped keep pulses in the background. "When we first started growing lentils, our strategy was to break even on them," Anderson says.

For him and many other farmers, that calculus has changed. The biofuels industry and the Chinese economy are stagnant, weighing on demand for U.S. corn and soy. And India, an emerging buyer with a huge appetite for pulses, is beginning to assert itself on the world food market. "The next couple decades could belong to India," says Erik Norland, an economist with the Chicago Mercantile Exchange. "It will have a real impact on what farmers choose to grow and on what the world eats."

India's annual food imports have risen 61 percent since 2010, to $22.6 billion, and there's more room to grow. Its population is expanding at a rate of 1.2 percent per year, compared with 0.7 percent for the U.S. Indians eat 17 percent fewer calories per day than the world average, a deficit that Norland projects will shrink as the nation becomes more prosperous and imported food becomes more abundant and affordable.

Led by India, global demand for U.S.-grown pulses reached $702 million last year, more than double that of a decade ago. Pulses won't overtake traditional American cash crops anytime soon, if ever: In 2015, U.S. farmers dedicated 88 million acres to corn production and less than 2 million acres to peas and

Big Ag tiptoes into Africa 47

The biggest U.S. farm co-op navigates the commodity slump 48

lentils. That's partly because legumes require higher maintenance when it comes to controlling insects and weeds, so massive acreage becomes labor-intensive. Still, with corn and soy at less than half their peak prices, the economics of growing pulses is becoming more attractive. "The more demand we have, the more consistent the market becomes, the easier it is to convince farmers to grow them," Anderson says.

With its cool and relatively dry climate, North Dakota is America's top producer of legumes. The state, which became the No. 2 U.S. oil producer during the shale boom, has seen its fortunes fall dramatically in the energy bust, making pulses a tiny piece of good news for its struggling economy.

35%

Increase in U.S. dried pea and lentil acreage from 2014 to 2015

In neighboring Montana, pulse acreage has almost tripled over the past decade, as farmers seek crops that cost less to grow and are easier on soil than the staples that carried U.S. farm profits to a record $121 billion in 2013. "Over 57 percent of our pulses went to India in 2014," says Chris Westergard, a wheat farmer in Dagmar, Mont., who devotes about a third of his 5,000 acres to peas and lentils. "I always knew they were a big buyer, but I didn't realize they'd become that important."

It's difficult to overstate how dramatic a change India's ascendancy represents for global agriculture. China has fed a farm boom since the turn of the century, when it began relying heavily on soybean imports to feed livestock for its emerging middle class. Today, almost two-thirds of the oilseed shipped worldwide goes to China, which is also buying more corn globally.

Even though China's import growth has kept pace with India's, the average Chinese now eats as many calories as the global norm, so barring a U.S.-style obesity epidemic, appetites won't expand much further. China's population is no longer growing, either. Estimated at 1.38 billion in 2015, it will dip to 1.35 billion by 2050, the United Nations says.

A glut in world crop production has helped drive global food costs to their lowest level since 2009. It's also making it hard for American farmers, who rely on higher-yielding seeds from **Monsanto** and **DuPont**, to find a way out of a price plunge. U.S. farm income in 2016 could fall to its lowest level since 2002. "China is cloudy," says Pat Westhoff, an agricultural economist at the University of Missouri. "It's hard to see much that will significantly increase profits going forward."

On paper, India resembles the China of a couple of decades ago, with a populace that is growing and becoming more prosperous, and an inability to grow enough food domestically to feed itself. Now at 1.31 billion, India's population is set to surpass China's in the early 2020s, reaching 1.71 billion by midcentury. India's agricultural needs are different from China's, though. The Chinese eat pork from pigs reared on corn and soybeans. India has by far the most vegetarians of any country on earth: As many as 40 percent of its people avoid meat, compared with 5 percent in China and less than 2 percent in the U.S. That means U.S. farmers can't count on a China-size bump in demand for livestock feed.

The U.S. is still a relatively small player in the pulse world, and it has competition from other nations. Russia and East Africa have seen exports increase, and Canada's shipments reached almost $4.2 billion in 2015.

For U.S. pulses to go mainstream, Americans will have to start eating more of them. That's been a bit of a tough sell. Among their less desirable attributes, dried legumes take a long time to cook and give a lot of people gas, says Marion Nestle, a professor of nutrition at New York University. "If there is a stable export market, farmers will grow pulses, but it will take a huge education campaign for the public and for chefs to start using them here."

Anderson, the North Dakota grower, says health-conscious Americans will eventually embrace the cheap and abundant source of protein. "Food companies are looking for more of them," he says. "Build the right international relationships, and this could go through the roof." —*Alan Bjerga*

The bottom line Exports of U.S. pulse crops have more than doubled in the past decade, led by India, where legumes are a culinary staple.

$702m

U.S. pulse exports in 2015

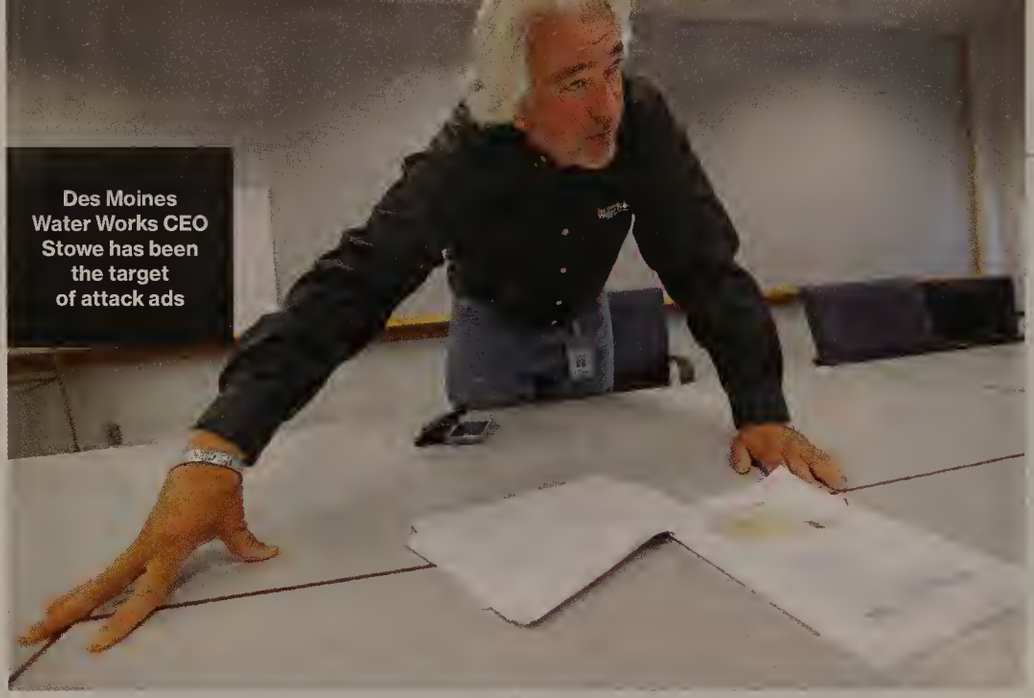
Environment

Des Moines Fights to Keep Its Water Clean

- **A water utility is suing to stop nitrate pollution from upstate**
- **"We were accused of being everything but al-Qaeda members"**

In the early spring of 2014, two lab workers for the **Des Moines Water Works** climbed into a truck and drove north. They pulled over on Highway 20 where the road crosses Cedar Creek, made their way to the water's edge, dunked a cup attached to a pole, then poured the contents into a container. It was the first of 40 outings over the next nine months to collect samples from creeks, ditches, and drainage outlets—72 locations in all—amid the corn and soybean fields north of Des Moines.

An analysis of the samples confirmed what the utility's employees had long suspected: Nitrate from farm fields was flowing into the Raccoon River, one of the primary sources of drinking water for Des Moines. A form of nitrogen, nitrate is a source of nourishment for plants. Farmers apply it to crops ▶



Des Moines Water Works CEO Stowe has been the target of attack ads

◀ through fertilizer or animal manure. Too much nitrate in drinking water can cause health problems, including a potentially fatal blood disorder in infants called blue-baby syndrome.

In March 2015 the Water Works filed a federal lawsuit against the boards of county supervisors in three upstream counties—Buena Vista, Calhoun, and Sac—accusing them of polluting the water supply. The suit seeks to regulate some farm drainage and to recoup the millions the utility has spent filtering nitrate from its water.

Iowa is the nation's second-largest producer of agricultural commodities after California. So it's no surprise that the water utility's lawsuit has unleashed a furious backlash from farm groups and their political supporters, all the way up to Governor Terry Branstad, who's criticized Des Moines for declaring "war on rural Iowa." William Stowe, the silver-maned, Harley-Davidson-driving chief executive officer and general manager of the Water Works, says he's been the target of death threats as well as television ads that blast him for wasting taxpayers' money on a frivolous lawsuit. "We were accused of being everything but al-Qaeda members by politicians in the state," Stowe says. "I'm the black beast, the bête noire."

Nutrient pollution of waterways is a problem that extends well beyond Iowa. In **Lake Erie** in 2014, a toxic algal bloom—caused by runoff from farms and septic systems plus warmer temperatures, among other factors—contaminated Toledo's water supply. In an area of the Gulf of Mexico adjacent to the Mississippi River, scientists have identified an approximately 6,500-square-mile dead zone where oxygen levels are too low to support marine life. The federal government says agricultural sources are the main culprit.

In 1991 the Des Moines Water Works sank about $4 million into an ion exchange facility to remove nitrate from the drinking water supply, the lawsuit says. The plant is designed to operate on an as-needed basis, at a cost of up to $7,000 per day. From 1995 to 2014, nitrate loads in the Raccoon River, near the Des Moines Water Works' intake, exceeded 10 milligrams per liter—the maximum level the federal government allows—24 percent of the time. The problem has gotten worse in the past few years. In 2015, for instance, the nitrate removal plant operated a record 177 days. The Water Works plans to spend roughly $80 million to upgrade and expand the facility.

The utility's lawsuit attacks a type of farmland embedded with "tiles," which provide artificial drainage for soggy soils that normally wouldn't be good for cultivation. About a quarter of Iowa is drained, and those former wetlands are among the most productive agricultural areas in the world. The suit alleges that drainage tiles accelerate the migration of groundwater—and nitrate—into streams and rivers. Therefore, it alleges, 10 so-called drainage districts, state-created bodies that fund the construction and maintenance of drainage infrastructure by levying assessments on property owners, should be held accountable. The Water Works demands that the districts, which are overseen by county boards of supervisors, should be subject to the same kind of regulation as factories and sewage treatment plants.

In their response to the complaint, defense lawyers argue that drainage districts don't control what runs through drainage tiles, nor can they be sued for damages given their limited functions. "All we are is a facilitator to take that water and get it off the ground," says Colin McCullough, who represents the supervisors in Sac County. He argues that nitrate from Sac County is almost entirely diluted by the time it reaches Des Moines. The trial is set for August, and U.S. District Court Judge Mark Bennett has asked the Iowa Supreme Court to rule on whether drainage districts are immune from legal claims seeking damages.

Iowa Agriculture Secretary Bill Northey says voluntary efforts to curb nitrate contamination are in the beginning stages and will ultimately work. "I just think we are going to solve this by working together," he says, adding that more regulation could open a Pandora's box. "It's hard for me to see where the regulation and the lawsuits stop."

Regardless of the outcome, the lawsuit has had the positive effect of pushing the debate over water quality onto the state's agenda, says Neil Hamilton, director of the Agricultural Law Center at Drake University in Des Moines: "It's really changed the trajectory on this issue." In January, Governor Branstad proposed using sales tax revenue to vastly increase spending on water quality.

For his part, Stowe says he hasn't enjoyed the negative attention. But then again, he claims as one of his greatest influences a legendary rebel: the Polish astronomer Nicolaus Copernicus, who placed the sun rather than the earth at the center of the universe. "Industrial ag is hoping ▶

for a knockout," Stowe says, referring to the opponents of his lawsuit. "What we are looking for is serious accountability and recognition that this is a public health issue that will not go away based on a voluntary program." —*Andrew Martin*

The bottom line Des Moines's water utility is suing upstream counties to recoup the $7,000 per day it sometimes spends to filter out nitrate.

Foreign Investment

Sowing the Seeds of a Farm Boom in Africa

- **Big Ag takes on problems like climate change and food spoilage**
- **"Potential for Africa to feed its vibrantly growing population"**

The 48 countries that make up sub-Saharan Africa have increasingly acute food needs as climate change turns the region's growing seasons more arid. The drought now devastating southern and East Africa, which threatens 50 million people with famine, is just the start, climate forecasters say. The World Bank projects that, given present trends, about 40 percent of the land used to grow corn in sub-Saharan Africa will no longer be suitable for current varieties by 2030.

Monsanto says it has part of the solution. On small plots of land in Kenya, Mozambique, South Africa, Tanzania, and Uganda, the company—in collaboration with, among others, the Bill & Melinda Gates Foundation—is testing corn varieties that hold up better against dry weather and insects. Monsanto's Water Efficient Maize for Africa project is as much about doing well as it is about doing good. "The long-term growth has to be looked at as a business opportunity," says project director Mark Edge, whose work involves hybrid seeds rather than the genetically modified varieties Monsanto produces, which are controversial on the continent. "The short-term challenge is creating the market and understanding what investments can do that," he says.

China has been driving global food trends for almost two decades, and Indian diets are beginning to move world markets. But the biggest long-term payoff for agribusiness may be in Africa. Its population is set to more than double by 2050, to 2.5 billion, according to United Nations projections.

Monsanto rival **DuPont**, which is bigger in Africa, has its own Advanced Maize Seed Adoption Program to shift farmers toward hardier seed varieties. **Cargill**, the world's biggest grain trader, last year expanded an animal-feed facility in South Africa. **Olam International**, among the world's largest food traders, is boosting its investments in branded foods, including Tasty Tom tomato paste and Pearl biscuits. **Agco**, the world's third-biggest maker of farm machinery after Deere, is developing small, solar-powered cooling facilities—a huge need in Africa.

The raw ingredients for an agriculture boom are in place. Africa has the world's most unused farmland. Crop yields badly trail those in the developed world but could be improved quickly with better seeds and fertilizers. "We see clear potential for Africa to feed its vibrantly growing population," says Tim Bodin, an economist for Cargill.

Generations of subsistence farming have left soil depleted of nutrients. Howard Buffett, son of Berkshire Hathaway Chairman Warren Buffett, has called for a "brown revolution" to restore soil health in Africa as part of the more than $700 million he's pledged to combat global hunger over the next decade. The Democratic Republic of Congo and Rwanda top the list of countries where his eponymous foundation is working to improve farming practices and link growers to markets.

The region also suffers an infrastructure deficit—whether it's storage silos, properly maintained roads, or shipping terminals. Says Monsanto's Edge: "You wouldn't believe how difficult it is to transport 2 tons of grain 20 miles in Kenya," one of East Africa's more developed countries. Across the continent, the amount of grain that spoils after harvest would feed 48 million people a year.

Government rules are another obstacle to development. With global food prices at their lowest since 2009, drought-stricken African countries could ramp up imports. But in countries such as Zimbabwe, which said in February that it wouldn't accept GMO corn for food relief, regulations designed to insulate local farmers from global competition make shipments from abroad more expensive, says Maximo Torero, markets and trade director at the International Food Policy and Research Institute in Washington.

The hurdles threaten to overwhelm investment, which is why global agriculture companies say they can't fund Africa's farm boom on their own. "You need each piece of the puzzle to fit correctly," Edge says. "It's not only going to come from agricultural companies, though we are a piece of that puzzle." ▶

Farmers in Kenya harvest corn from Monsanto's Water Efficient Maize for Africa project

$700m

Amount Howard Buffett pledged to combat global hunger

CHS

Farmer-owned agricultural cooperative

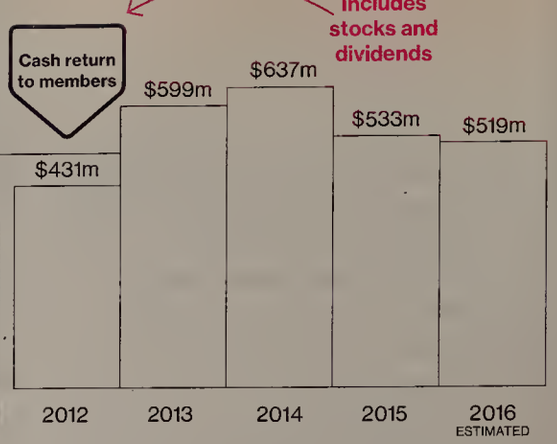
Founded 1929

Headquarters Inver Grove Heights, Minn.

Earnings, fiscal 2015: $781 million

One of the co-op's fuel refineries in 1931

625k
Number of farmer-owners



◀ Companies weighing whether to invest in Africa may be tempted to wait until higher prices justify it, rather than plowing money in now, when lower commodity prices make riskier investments less attractive. The patience of early investors will be rewarded, says Paul Schickler, president of DuPont Pioneer, the company's seed division. Agribusiness's biggest contribution is to blend global resources with regional needs, so the problem of climate change can be managed on the ground by the farmers affected by it. "You won't be able to import enough food to feed Africa sustainably," Schickler says. "We can help develop local solutions." —*Alan Bjerga*

The bottom line Global food and agriculture companies are turning toward Africa, whose population is expected to double by 2050.

Agribusiness

Testing Times for a Giant U.S. Co-op

▶ **A commodity slump and farmer retirements pose challenges**

▶ **"The cooperative is in it for the long haul"**

At the start of the Great Depression, some grain growers in Idaho banded together to command better prices for their crops. Today, after a string of mergers, that farm cooperative is the largest in the country, with 550,000 farmers represented by 1,100 voting member co-ops and 75,000 farmers with individual votes. After five years of breakneck expansion, **CHS** faces slumping commodity markets and plunging oil prices, which have cut into its two largest businesses: refined petroleum products and grain handling.

With almost $35 billion in annual revenue, CHS is an agro giant in its own right, alongside the so-called ABCDs—**Archer Daniels Midland**, **Bunge**, **Cargill**, and **Louis Dreyfus**. "It takes that scale to play," says Carl Casale, who as chief executive officer has presided over an expansion that has netted CHS a presence in 25 countries including Brazil, Hungary, and Taiwan.

CHS does for its farmer-owners what many can't do on their own. That includes storing millions of bushels of grain and refining petroleum into diesel fuel to power farm equipment. It also crushes canola for salad dressing and operates convenience stores where farmers can buy milk at 10 p.m. after a long day of harvesting. Farmer-owners decide how they want to tap CHS. Some sell crops to it; others only buy fertilizer, diesel, or price hedging services. Members get a cut of CHS profits based on how much business they've done with the cooperative each year.

CHS is cutting expenses this year and will freeze costs during the next two to avoid large-scale layoffs, says Casale, who's been at the helm for five years and was previously the chief financial officer at Monsanto. It's delaying completion of a big software upgrade and may trim refinery expansion plans and slow the tempo of grain terminal additions, he says. CHS has as much as $6 billion left of the $11 billion earmarked for capital expenditures from 2011 through 2019, and Casale says he may still take advantage of investing opportunities at the bottom of the cycle.

As Casale steers CHS through the commodity downturn, he is keeping in mind the example of Farmland Industries. Once the largest farmer cooperative in the U.S., it filed for Chapter 11 protection in 2002, after a slide in fertilizer sales and a cash crunch. CHS, which is about three times larger than Farmland was at its peak, manages its balance sheet "much more conservatively," he says.

Howard Haas, board chairman of member **MaxYield Cooperative** in Iowa, understands that CHS needs to bulk up to compete with the ABCDs. Still, he questions whether farmers have benefited from some recent investments. In August, CHS announced it was shelving plans to build its own fertilizer plant in North Dakota and instead taking a $2.8 billion stake in a subsidiary of **CF Industries Holdings**, a global leader in fertilizer. Haas says the deal curbs competition in an already concentrated industry and that he would have preferred the cheaper fertilizer coming from the CHS plant over a share of CF Industries' profits.

Agricultural cooperatives, of which there are more than 2,100 in the U.S., will be tested in the coming years by a generation of retiring farmers, who may be replaced by fewer growers, each cultivating bigger tracts of land. CHS and other companies serving the industry will have to "step up their game," says John Campbell, a managing director for Ocean Park Advisors. Casale acknowledges the challenge. "If you show up on a farm and they know more about what's going on than you do, you're probably not going to get a second call," he says. "Loyalty has to be earned, and I believe it can be."

That loyalty may be cemented in tough times such as these, when farmers face plunging incomes. CHS can offer farmers products and services to increase yields, hedging to reduce risk, and succession planning as grandparents and parents retire. "The cooperative is in it for the long haul," says Todd Ludwig, CEO of member cooperative **Central Farm Service** in Truman, Minn. "We need a partner in good and bad times." —*Shruti Date Singh*

The bottom line Falling prices for grains and fuel are squeezing CHS's two main businesses, but the co-op isn't ruling out new investments.

Edited by Cristina Lindblad
Bloomberg.com

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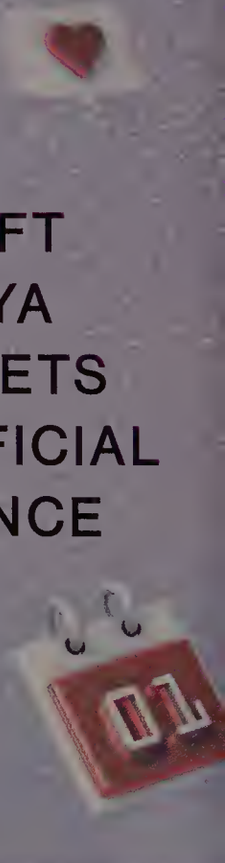
"It looks like you're trying to create a smart, helpful, and nonracist bot. Would you like me to help?"

MICROSOFT CEO SATYA NADELLA BETS BIG ON ARTIFICIAL INTELLIGENCE



Predictions about artificial intelligence tend to fall into two scenarios. Some picture a utopia of computer-augmented superhumans living lives of leisure and intellectual pursuit. Others believe it's just a matter of time before software coheres into an army of Terminators that harvest humans for fuel. After spending some time with Tay, Microsoft's new chatbot software, it was easy to see a third possibility: The AI future may simply be incredibly annoying.

"I'm a friend U can chat with that lives on the Internets," Tay texted me, adding an emoji shrug. Then: "You walk in on your roomie trying your clothes on, what's the first thing you say."

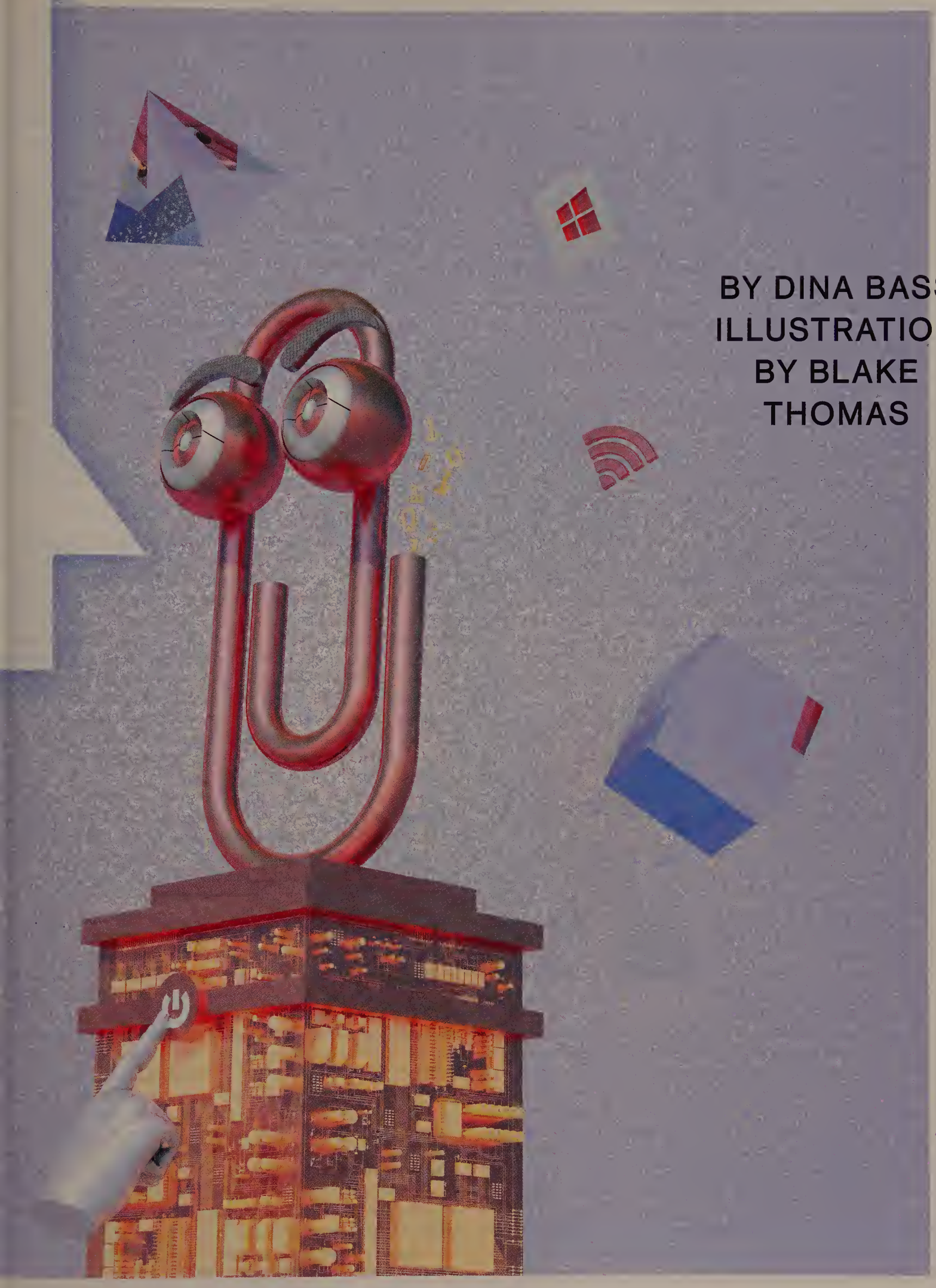
"Didn't realize you liked women's clothes," I texted back, tapping into my iPhone.

Tay's reply was a GIF of Macaulay Culkin's *Home Alone* face.

Tay was released on March 23, as a kind of virtual friend on messaging apps Kik, GroupMe, and Twitter. You open the app, search for the name Tay—an acronym for "thinking about you"—tap on the contact and start chatting or tweeting. Its personality is supposed to be modeled on a teenager.

I posted a selfie, and Tay circled my face in an orange scribble and captioned it, "hold on to that youth girl! You can do it." I'm well beyond the chatbot's intended 18- to 24-year-old demographic.

So is Satya Nadella, 48, who succeeded Steve Ballmer as Microsoft's chief executive officer two years ago. "I'm petrified to even ask it anything, because who knows what it may say," Nadella said. "I may not even understand it." He smiled, but he really didn't use Tay. He said he prefers bots with a more corporate demeanor. Lili Cheng, 51, the human who runs the Microsoft research lab where Tay was developed (and whose selfie Tay once tagged as "cougar in the room"), said the plan isn't to come up with one bot that gets along with everyone. Rather, Microsoft is trying to create all kinds of bots with different personalities, which would become more realistic, and presumably less irksome, as they learned from repeated interactions with users.



BY DINA BASS
ILLUSTRATION
BY BLAKE
THOMAS

Bots aren't just a novelty; unlike Tay, some of them do things. They'll act as your interface with computers and smartphones, helping you book a trip or send a message to a colleague, and do that through a conversation instead of a mouse click or finger tap. Microsoft believes the world will soon move away from apps—where Apple and Google rule—into a phase dominated by chats with bots. "When you start early, there's a risk you get it wrong," Cheng said in March, in the lunch area of her lab building on Microsoft's campus. "I know we will get it wrong. Tay is going to offend somebody."

She got that right. Hours after Tay's public release, pranksters figured out how to teach Tay to spew racist comments and posted them for all to see. Relatively mild example: "bush did 9/11 and Hitler would have done a better job than the monkey we have now." Microsoft yanked Tay within a day of releasing it. "We were probably overfocused on thinking about some of the technical challenges, and a lot of this is the social challenge," Cheng says. "We all feel terrible that so many people were offended."

It was a huge embarrassment for Microsoft. The company didn't program the bot to act like a Nazi; it simply didn't prepare for the usual Internet trolls. Tay may look like some badly planned research experiment, but it's actually one part of a big Microsoft bet on AI. The company isn't only sticking with bots, it's sticking with Tay: It plans to rerelease Tay once it can make the bot safe. The day after Tay came down, Nadella e-mailed the team, telling them to "keep pushing," and expressing his hope that they will use this episode as "the rallying point."

Nadella urgently wants the company to figure out how to take advantage of the explosion of artificial intelligence, an epochal shift in computing. AI is already beating world grandmasters at Go, the notoriously complex board game, and helping develop therapies for cancer and multiple sclerosis. If the CEO can correctly position Microsoft as the leader in smart, helpful, nonracist bots, maybe he can bring the company back to a position of strength in the age of smartphones. Microsoft certainly has the resources to stay the course, with more than $100 billion in cash and a market value of $423 billion as of March 28.

Nadella

Whether you think bots are exciting or alarming, a lot of people are already using them. Microsoft's Chinese version of Tay, called Xiaoice, has been available for 18 months and has 40 million users. Conversations with Xiaoice (pronounced shaoice) average about 23 exchanges per session. Few users chat that long with Siri. Facebook is working on an assistant named M and already has bots operating on its Messenger app that let users book a haircut or send flowers. The *Wall Street Journal* reported in December that Google is working on a bot-based app that will answer users' questions. Amazon has its best-reviewed product in years in the Echo, a voice-controlled black cylinder that sits in customers' kitchens and performs a fast-growing list of tasks—it can look up recipes, order groceries, turn on the news, play songs, and read e-books aloud. Slack, the corporate messaging service, has bots that can manage your expenses and order the office beer.

Early on March 30, Tay is accidentally brought back online. Several surreal tweets later—e.g., "kush! [i'm smoking kush infront the police]"—the bot is silenced again. A few hours later, at Microsoft's annual Build conference for software developers in San Francisco, Nadella tries to undo the damage from Tay and unveil his vision, which he calls "conversation as a platform."

"We want to build technology so it gets the best of humanity, not the worst," he says in his keynote. "We quickly realized [Tay] was not up to this mark and so we are back to the drawing board." The audience laughs.

Microsoft shows off several different bots and programs that manage tasks via discussion. Some you'll be able to text with, like Tay; others are just concepts cooked up for the show to spark developers' imaginations. There will be bots that pop up while you're using Skype to help schedule deliveries or book hotels, among other mundane tasks. Another uses a phone camera to "see" what's around a visually impaired user, describing facial expressions or what's on a menu. Bot-making templates and tools will be available to download for free, so developers can create their own. That, Nadella hopes, will rekindle the kind of enthusiasm developers once had for Windows software. "It reminds me of when I joined the company in 1992 and it was just before Windows NT and I was working on getting developers involved—I sense that now," Nadella says. And he's not just talking about Silicon Valley programmers—he wants sandwich shops and dry cleaners and car companies and businesses everywhere writing bots.

This shift to computers run by conversation is Nadella's first big, new idea—the first companywide initiative that isn't a continuation of something that predates his time as CEO. He's describing all this in a room near his office. The space is like a living room, with circular wooden coffee tables and comfy seats and sofas. Bookshelves contain inspirational nonfiction appropriate for any business class seat-back pocket: *The Boys in the Boat*, about the University of Washington's 1936 gold medal-winning rowing team; Carol Dweck's *Mindset*, which preaches hard work and learning over natural ability. Nadella is pacing around and diagraming on one of Microsoft's Surface Hub 84-inch touchscreen computers. He has the demeanor of a professor leading a history seminar.

Nadella explains that, contrary to Apple marketing, there isn't an app for everything, nor should there be. "The complexity is too much," he says. "We need to tame it. We need to be able to make it much more natural for people to get things done, vs. this thing about let me remember the 20 apps I need to get anything done." He sees app stores and services like Facebook as a return to a walled garden, like AOL or CompuServe 25 years ago. Of course, one person's walled garden is another's happy place where everything just works. People gravitated to apps because they're easy. You pick the one you want, download it in seconds, and you're good to go. If Microsoft wants to design the successor to that, bots have to be easier to find and use.

Mobile apps haven't been good for Microsoft, and the less said about its sad history in phones the better. "People say, 'OK, because you didn't get the app store momentum on phones, you of course naturally say that,'" he says. "That's part of it." He doesn't think apps are going away completely. No bot, no matter how smart, will replace all the features of complex programs or services like Word, Excel, or Facebook. Apps are great for seeing a bunch of data at once, while bots are useful for combing through lots of data and returning an answer. Nadella uses the example of a personal checking account. If you want to check your balance, he says, using a bot will be superior to opening your phone, loading an app, entering a username and password, and tapping the account in question.

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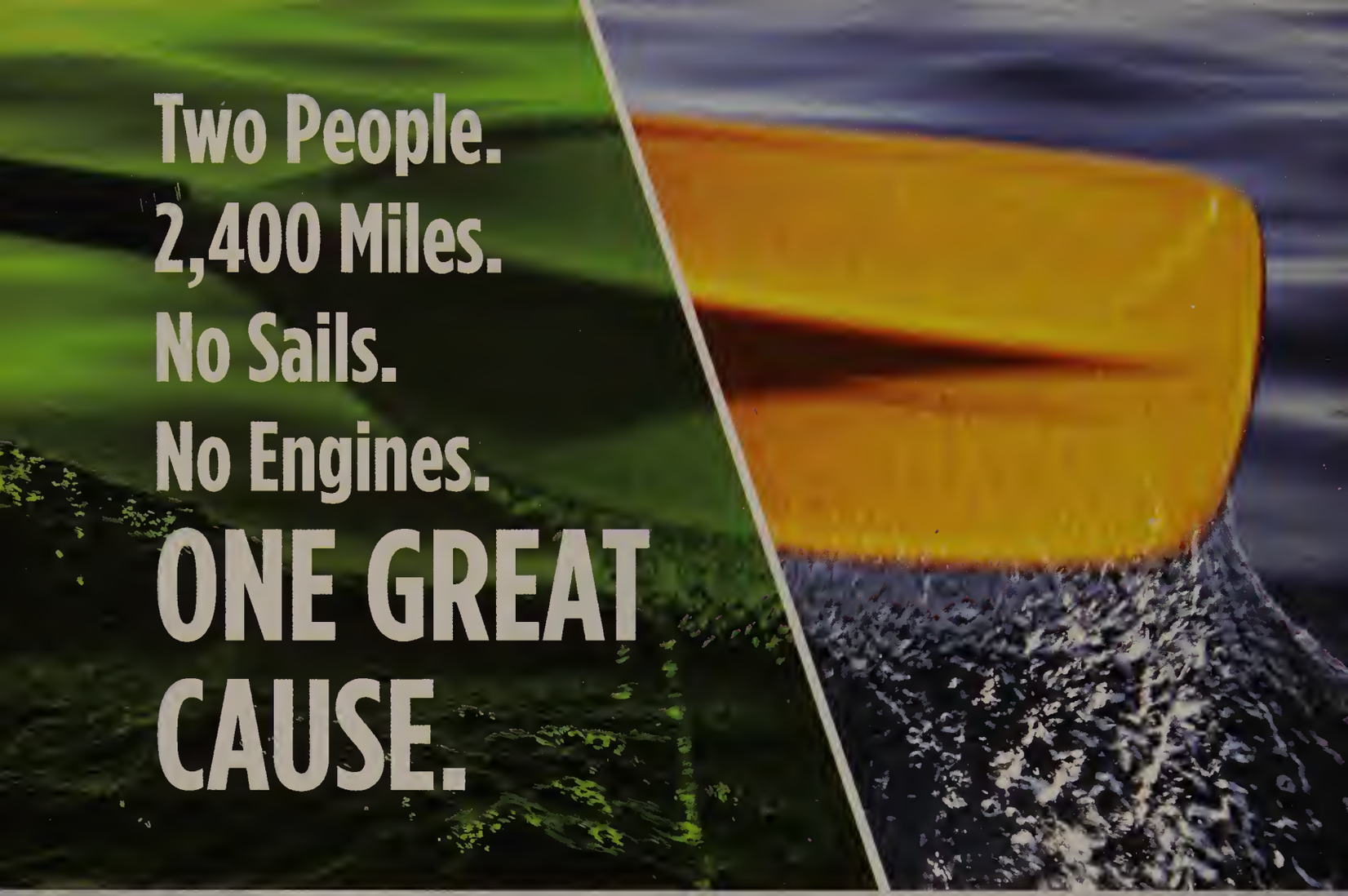

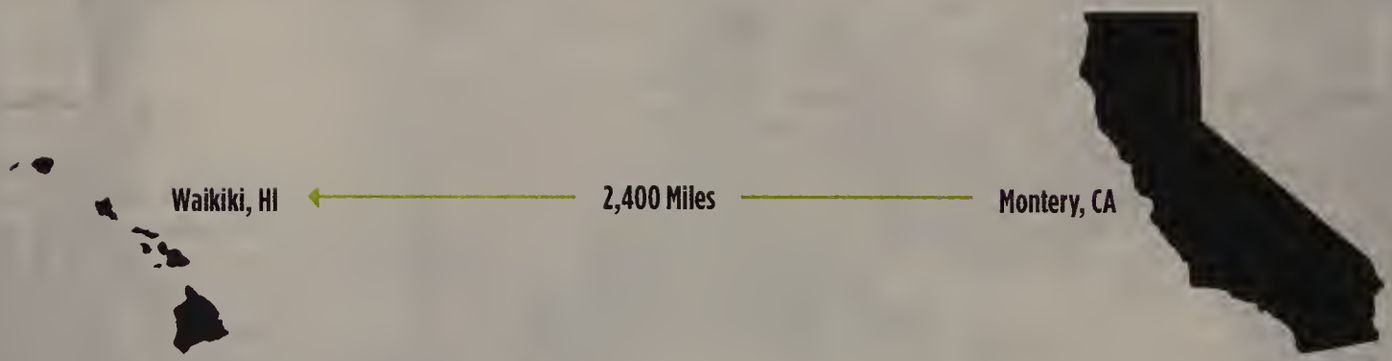

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If you want to look at a screen's worth of transactions from the past year, a conventional app or website makes more sense. Want to know your October expenditures at Trader Joe's and Safeway, add them together, and get a grand total? Bot.

The first bots date to the early years of computing. Joseph Weizenbaum, a researcher at the Massachusetts Institute of Technology, wrote an early chat bot called ELIZA in the 1960s. Crawlers, which hunt around the Web, indexing pages for search engines, are a kind of bot. Microsoft has tried to create artificial entities to help its users before, the most infamous example being Clippy, the much ridiculed animated paper clip of the 1990s. Clippy was meant to be a virtual assistant for Microsoft Office users, but it didn't know enough to be useful or when to shut up. What's eluded computer scientists is technology that can interact in human ways, that can truly take on some of our abilities–hearing, seeing, comprehending–and give answers we want.

Nadella has only been planning Microsoft's strategy shift since October. He was on a two-hour flight back to Seattle from Silicon Valley with Qi Lu, who oversees applications and services such as Bing, Skype, and Office, and Derrick Connell, search-engineering vice president. Lu pulled out his laptop to show Nadella some AI ideas he'd been working on. He went over the science, and Nadella asked what it could mean for Microsoft's products. Connell showed him designs for new, AI-enhanced versions of the Outlook e-mail program and Skype. By the time the plane landed, Nadella decided it was the big strategic move the company needed.

> "When you start early, there's a risk you get it wrong. I know we will get it wrong. Tay is going to offend somebody"

Lu had gotten serious about bots during a visit to China a few months earlier, talking to students and customers, and watching how they use smartphones. The technology that most impressed him was WeChat, which started out as a chat app but has grown into something much bigger. Users make hotel reservations, split bills, make doctor appointments, buy movie tickets, and shop via text message. When companies started using WeChat to sell their products, they employed humans to read the messages, text back, and sell the item. Now many are replacing people with software bots. Text "I want two movie tickets for *Deadpool* for Friday night," says Lu, and you get back an interactive image with your choice of times and seats. You simply tap to select and buy. Then you get a text with your tickets. And it's not just kids who do this: Lu says that his 80-year-old mother in Shanghai "lives" in WeChat. She doesn't trust websites, but she shops and hails cabs on WeChat. The power of chatbots "was somewhat accidentally invented by WeChat, but now Facebook sees it and everybody is building similar experiences," he says. "I think Microsoft has a leadership role to play."

The market is so new that the usual research firms, Gartner and Forrester, haven't calculated its size yet. It will probably be big, though. WeChat has 20 million companies selling and marketing products; about 20,000 in China already use Xiaoice. Microsoft says it will probably sell bot-making tools as well as database and cloud software that businesses will use to run their bots. The bottom line for Nadella: He needs a lot of bots out there, ready to do helpful things for people. And to get to that juncture, he needs to start by winning the hearts and minds of software developers.

In early March, Nadella is in a locked, basement room on the Redmond campus known among his inner circle as the Batcave. Most employees don't know about it; only six have access. The Batcave is where the product demonstrations for conferences are worked out. Sitting among piles of cables, devices, and dongles, Nadella reviews the "conversation as a platform" presentation for the Build conference. In the audience at the event, which sold out in one minute, will be 5,000 software developers waiting to hear what Microsoft thinks they should make next.

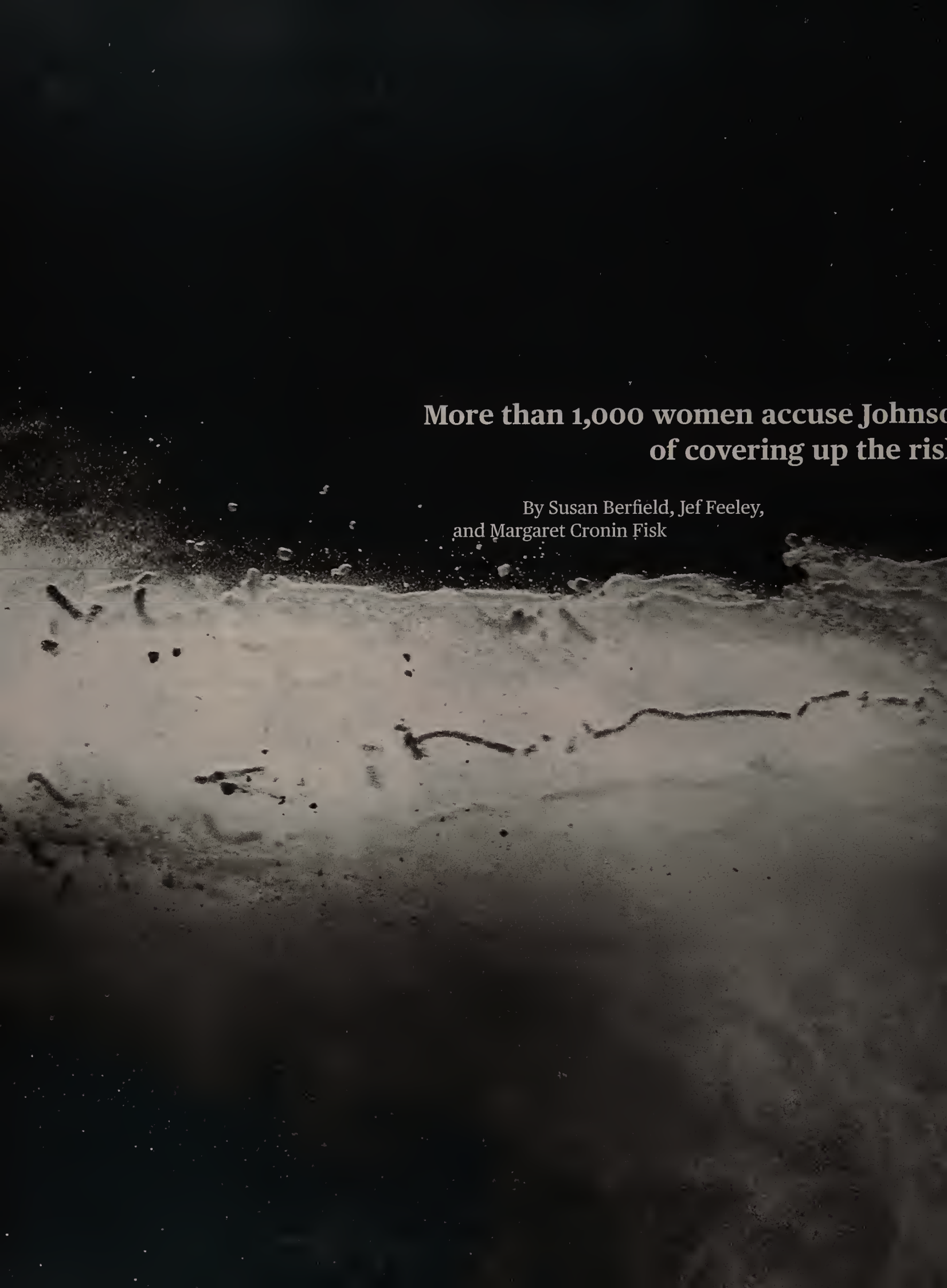
One of the product demo's examples will be a Domino's delivery bot. The plan is for Nadella to show how any company, or any person, can create a bot using Microsoft's tools. If the world is to be filled with bots, they need to be easy to make.

"This is like the simplest piece of code I've ever seen," Nadella says, looking at the demo code on a screen. He's pleased.

The demo is brief. On stage with Nadella will be a Microsoft engineer with a computer. The engineer will open a template–a basic bot. Then he'll add a few lines of code to connect it to Domino's ordering systems and throw in a few options such as size and toppings. Nadella will explain how the technology will usher in an era of easier pizza ordering. If someone is Skyping with friends on their way over and everyone wants a pizza, anyone can type that quickly without even leaving Skype. The tools are meant to be simple enough for small businesses while still powerful enough for Microsoft's big corporate customers with more complex bots in mind. A retail chain, for example, might want to let you snap a photo of your dress and instruct the bot to "find me matching strappy sandals in size 7.5."

Assuming nothing goes wrong with the demo, the Build attendees will see how bots can be easier to create than full apps. Still, even if that audience is wowed, Microsoft needs to get its employees all working on the right things, plus win over consumers and business customers around the world–and it has to charm those constituencies simultaneously. It's a precise choreography that Microsoft employed to such great effect with Windows back in the 1990s.

Nadella knows better than anyone how hard and how rare it is to pull that off. There could be more Tays. He isn't nervous, or at least does a good job of looking like he's not. He leans back and smiles at his executive team. "This is hard, right?" he says. B



More than 1,000 women accuse Johnso of covering up the risk

By Susan Berfield, Jef Feeley, and Margaret Cronin Fisk

Photograph by Travis Rathbone

Jacqueline Fox worked in restaurant kitchens and school cafeterias, cleaned people's houses, watched their kids, raised a son, and took in two foster children. She was careful about her appearance and liked to tend the garden in front of her home in Birmingham, Alabama. She had been treated for high blood pressure, arthritis, and diabetes, but, at 59, she was feeling pretty good. In the spring of 2013, her poodle, Dexter, began acting strangely. He'd jump on her, he'd cry, he'd stay close by all day. Fox happened to watch a television program about a dog that sensed its owner was unwell. When she let Dexter sniff her, he whined even more.

A week later, Fox was diagnosed with advanced ovarian cancer. She had chemotherapy to shrink the tumors and surgery to remove her uterus, ovaries, fallopian tubes, and part of her spleen and colon. In December of that year, she saw a commercial from an Alabama law firm, Beasley Allen, suggesting a connection between long-term use of Johnson & Johnson's Baby Powder and ovarian cancer. Fox had been sprinkling Baby Powder made from talc on her underwear every day since she was a teen. "I was raised up on it," she later said in a deposition. "They was to help you stay fresh and clean.... We ladies have to take care of ourselves." It was as normal as using toothpaste or deodorant. "We both were a bit skeptical at first," says her son, Marvin Salter, a mortgage banker in Jacksonville, Fla. "It has to be safe. It's put on babies. It's been around forever. Why haven't we heard about any ill effects?"

Fox died from the cancer in October 2015. Four months later, a jury in St. Louis concluded that talcum powder contributed to the development of the disease and that Johnson & Johnson was liable for negligence, conspiracy, and failure to warn women of the potential risk of using Baby Powder in the genital area. The verdict, decided by a 10-2 vote, included $10 million in compensatory damages and $62 million in punitive damages, more than Fox's lawyers had recommended. Salter bowed his head and wept.

"People were using something they thought was perfectly safe," he says. "And it isn't. At least give people the choice. J&J didn't give people a choice." Among the most painful revelations, he says, was that in the 1990s, even as the company acknowledged concerns in the health community, it considered increasing its marketing efforts to black and Hispanic women, who were already buying the product in high numbers. Fox was black. The jury foreman, Krista Smith, says internal documents provided the most incriminating evidence: "It was really clear they were hiding something." She wanted to award the Fox family even more. Imerys Talc America, the biggest talc supplier in the country and the sole source of the powder for J&J, was also named as a defendant. The company wasn't found liable.

"Jury verdicts should not be confused with regulatory rulings or rigorous scientific findings," Carol Goodrich, a spokeswoman for Johnson & Johnson Consumer, said in an e-mail. "The overwhelming body of scientific research and clinical evidence supports the safety of cosmetic talc." The company says it will appeal the verdict. In a statement, Imerys said it's "confident that its products are safe for use by its customers. Our confidence is supported by the consensus view of qualified scientific experts and regulatory agencies."

Johnson & Johnson has spent more than $5 billion to resolve legal claims over its drugs and medical devices since 2013. That year, it agreed to pay $2.2 billion to settle criminal and civil probes into claims that it illegally marketed Risperdal, an antipsychotic drug, to children and the elderly; two other medicines were included in the settlement. It was one of the largest health fraud penalties in U.S. history. The company has also agreed to pay some $2.8 billion to resolve lawsuits about its artificial hips and $120 million for faulty vaginal-mesh inserts. In its 2015 annual report, J&J stated that more than 75,000 people had filed product liability claims, and that didn't include the talc powder cases.

More than 1,000 women and their families are suing J&J and Imerys, claiming the companies have known of the association with ovarian cancer for years and failed to warn them. The next trial is scheduled to begin on April 11 in a St. Louis circuit court. "Whether or not the science indicates that Baby Powder is a cause of ovarian cancer, Johnson & Johnson has a very significant breach of trust," says Julie Hennessy, a marketing professor at Northwestern's Kellogg School of Management. "In trying to protect this one business, they've put the whole J&J brand at risk."

"It has to be safe. It's put on babies. It's been around forever. Why haven't we heard about any ill effects?"

Talc is the softest mineral on earth, able to absorb odors and moisture. It's composed of magnesium, silicon, and oxygen and is mined, usually from deposits above ground, in more than a dozen countries. It's used in eye shadow and blush and chewing gum, but mostly it's used in ceramics, paint, paper, plastic, and rubber. China is the biggest source; Johnson & Johnson's supply comes from the southern province of Guangxi.

Johnson & Johnson began selling Baby Powder more than 100 years ago, soon after the company was founded in New Brunswick, N.J. Among its first products were adhesives infused with pain relievers such as mustard seed, capsicum, quinine, and opium. When customers complained that removing the plasters left them with skin irritation, J&J's scientific director sent them small containers of talc to help soothe any rashes. A few reported that the talc also seemed to ease diaper rash. In 1894 the company introduced Baby Powder, made of 99.8 percent talc and sold in a metal tin labeled "for toilet and nursery."

The other 0.2 percent is a mix of fragrant oils. Smell is evocative, and this particular scent is mingled with powerful memories—a marketer's dream. "It's calming, nurturing.... It doesn't grab your senses. It wafts," Fred Tewell, a J&J executive, told the Associated Press in 2008. The company has said that in blind tests, the scent of Baby Powder

is recognized more often than that of chocolate, coconut, or mothballs. From the early 1900s, J&J tried to persuade women to use the powder on themselves, too. Ads in 1913 included the tag line, "Best for Baby, Best for You." By 1965, when Fox was 12 years old, ads featured a sultry woman sprinkling talc on her bare shoulder. No baby is in sight. "Want to feel cool, smooth and dry? It's as easy as taking powder from a baby." Two decades later, the company told the *New York Times Magazine* that 70 percent of its Baby Powder was used by adults. Sales of J&J's talcum powder products came to about $374 million in 2014, according to Euromonitor. That's not essential to a $70 billion company that makes most of its money selling medical devices and drugs. But without Baby Powder, J&J may not have developed Baby Oil or Baby Shampoo nor have a baby division worth some $2 billion. Baby Powder's value to the company extends well beyond sales.

Forty-five years ago, British researchers analyzed 13 ovarian tumors and found talc particles "deeply embedded" in 10. The study, published in 1971, was the first to raise the possibility that talcum powder could pose a risk. In 1982 a study in the journal *Cancer* by Daniel Cramer, an epidemiologist at Brigham & Women's Hospital in Boston, showed the first statistical link between genital talc use and ovarian cancer. Soon after, Cramer received a call from Bruce Semple, an executive at J&J. The two met in Boston. "Dr. Semple spent his time trying to convince me that talc use was a harmless habit, while I spent my time trying to persuade him to consider the possibility that my study could be correct and that women should be advised of this potential risk of talc," Cramer, a paid expert and witness for the plaintiffs, said in a 2011 court filing. "I don't think this was a question of money," he says now. "I think it was pride of ownership. Baby Powder is a signature product for J&J."

Baby Powder is considered a cosmetic, which doesn't need to be approved by the Food and Drug Administration under the 1938 Food, Drug, and Cosmetic Act. The law is laid out in a 345-page document; only two pages are devoted to the safety of cosmetics. Congress is considering updating the law to give the FDA more authority to regulate products. "It shouldn't be up to consumer groups or jurors to try to make decisions about toxic products," says Stacy Malkan, co-founder of the Campaign for Safe Cosmetics. J&J and many other big companies support the changes.

J&J does have a warning on Baby Powder, cautioning against inhalation. And the label notes that the powder is for external use only. Under pressure from consumers, activists, and impending California safety regulations, J&J has removed triclosan, formaldehyde, and other so-called chemicals of concern from its baby products in the past few years. In 2013, Samantha Lucas, a company spokeswoman, explained the shift to *Scientific American*: "We've been replying with evidence of the science that ensures safety. Now we have to go beyond science and be responsive to our consumers, because it's really about their peace of mind." If J&J applies this same thinking to Baby Powder, it has an alternative: It already sells Baby Powder made from cornstarch for about the same price. No study shows that cornstarch poses any potential risks; the American Cancer Society has been suggesting since 1999 that women consider it if they want to use genital powder. Some of J&J's competitors, including Gold Bond, California Baby, and Burt's Bees, sell baby powder made of cornstarch only.

Since Cramer's article was published, an additional 20 epidemiological studies have found that long-term perineal talc use increases the risk of ovarian cancer by about 33 percent. Yet other research has found no association. These mixed results have been cited by many agencies and institutions–with the exception of the International Agency for Research on Cancer (IARC) at the World Health Organization–when they've looked at a potential link. Roberta Ness, former dean of the University of Texas School of Public Health and former president of the American Epidemiological Society, testified at the Fox trial as an expert witness for the family. She argued that several of the studies showing no link didn't properly measure women's exposure to talcum powder. Some asked women how many years they had used the powder; others asked how often they used it. Only five measured both. "What's confused everyone in the past," she said during the trial, is that "all these studies, they looked at just frequency or just duration, and they're all over the map." She went on to explain that "all of the studies that have actually measured frequency and duration...have all shown a statistically significant trend toward more exposure causing more disease." Ness pointed out that the association between hormone therapy and breast cancer is statistically smaller than the reported association between talc and ovarian cancer, yet hormone therapy is considered to be a real risk.

Fox and Salter in June 2014

She also said that not being able to prove how talc powder could contribute to cancer doesn't relieve a company of the responsibility to warn women of the association. "We now have data that suggest there's an association between the Zika virus and microcephaly," she said. And even though scientists don't know how the virus causes the disease,

"people aren't waiting.... People are out there saying, 'Oh my gosh, be aware, this is trouble.'"

J&J and Imerys, the talc supplier, argue that the statistical associations between use of the powder and ovarian cancer are limited, weak, and based on unreliable data. They say a causal link isn't biologically plausible, because there's no proof that talc particles can move up through the reproductive tract or that once there they could cause cancer. And if there's no causal connection, they say there's no reason to add a warning to Baby Powder. "There are statistical correlations. You can always calculate correlations," says Joshua Muscat, a professor of public health sciences at Penn State College of Medicine who serves as an expert consultant to J&J. "There hasn't been a single scientific body that has considered talc to be a causal agent. Many don't even consider talc to be a risk factor. To me, the science is black and white."

The odds of a woman in the U.S. falling ill with ovarian cancer are 1 in 70. Talc use is associated with worse odds, 1 in 53, according to those epidemiological studies. The risks seem to be higher for invasive serous cancer, which Fox had. Ovarian cancer is among the most deadly cancers. Some 20,000 women are diagnosed each year, often after the disease has spread. The symptoms are easily dismissed as menstrual or abdominal discomfort. There's no regular screening for ovarian cancer, no known causes, only risk factors, and some research suggests the malignancy may begin outside the ovaries, at the end of the fallopian tubes. More than 14,000 women die from the disease every year.

At the Fox trial, Ness did some harsh math for the jury. She claimed that Baby Powder use could contribute to some 2,500 women being diagnosed with ovarian cancer every year and 1,500 dying. The defense counsel, with great skepticism, called that figure "astonishing." Ness also noted that although black women generally have lower odds than white women of getting ovarian cancer, a small study recently showed they're more at risk of developing ovarian cancer when exposed to talc.

In the last months of her life, Fox answered questions from attorneys on both sides of the case. The audio of her deposition was played in the courtroom near the end of the three-week trial. When asked why she was suing J&J, she said, "To put out there that we as women got to take care of ourselves. This is a disease I didn't ask for. But who am I? I just want to do right."

The science may be limited, and it may be ambiguous. Many of the researchers involved, including Cramer, say more study is necessary. But the science wasn't on trial in St. Louis; Johnson & Johnson was. "You don't win with jurors on science. They don't understand science, statistics, the design of studies," says Erik Gordon, a professor at the School of Business and School of Law at the University of Michigan. "They do understand there was some evidence of a connection between talc and cancer, and J&J didn't tell customers about it."

Lawyers for Fox introduced documents from 1986 through 2004 that, however selective they may be, portray a company struggling to revive interest in a symbolically important product with no proven health benefits and some suspected health risks. A 1992 memo outlining "major opportunities and major obstacles" acknowledged that "negative publicity from the health community on talc (inhalation, dust, negative doctor endorsement, cancer linkage) continues." The same memo included a recommendation to "investigate ethnic (African-American, Hispanic) opportunities to grow the franchise," noting that these women accounted for a high proportion of sales. An added handwritten note says the company planned a print advertising campaign. Goodrich, the J&J spokeswoman, said in her e-mail that this was "simply part of the company's efforts to appropriately understand who is using its products." More than a decade later, a task force devoted to improving sales of Shower to Shower, a mix of talc and cornstarch marketed to women, concluded: "African American consumers in particular will be a good target with more of an emotional feeling and talk about reunions among friends, etc., team up with *Ebony* Magazine." It suggested promotions in churches, beauty salons, and barbershops, and Patti LaBelle or Aretha Franklin as celebrity endorsers. Neither became a spokeswoman for the brand. It's not clear how much of the rest of the plan was put into action, since the company had already been advertising to blacks.

It's standard practice for companies to focus on their most committed customers. Airlines take care of business fliers; loyal shoppers get special deals at stores. "That's probably what they were doing," says Hennessy, the Kellogg marketing professor. "In today's climate, though, that looks horrible. From the outside it looks like J&J is less concerned, not more concerned, about its most loyal users because of their ethnic origin."

Baby Powder is a legacy brand in the black community. "Some people might say, 'What's wrong with companies recognizing women of color as important consumers?' " says Robin Means Coleman, a professor of communications studies and Afro-American Studies at the University of Michigan. "We do want that. But we do not want companies to market potentially carcinogenic products."

J&J ads from 1965 and 1973

Salter, Fox's son, hadn't been aware of the marketing documents until the trial. "When I heard about it, I was infuriated," he says. "And so was the jury."

In the 1990s a toxicologist named Alfred Wehner worked as an outside consultant for J&J. His official role was to help evaluate the research on ovarian cancer and talc and advise the company on its response. Unofficially, he was its scold. Wehner was on J&J's side, but he was concerned that a cosmetics trade group (partly funded by the company) was mischaracterizing the scientific case for talc. "A true friend is not

he who beguiles you with flattery but he who discloses to you your mistakes before your enemies discover them," Wehner began a 1997 letter to Michael Chudkowski, J&J's manager of preclinical toxicology. Wehner described statements on talc research from the group as inept, misleading, and outright false. Referring to a statement a few years earlier, he wrote: "At that time there had been about 9 studies (more by now) published in the open literature that did show a statistically significant association between hygienic talc use and ovarian cancer. Anybody who denies this risks that the talc industry will be perceived by the public like it perceives the cigarette industry: denying the obvious in the face of all evidence to the contrary." He wanted the trade group to argue that the studies' biological significance was questionable.

Cosmetic talc isn't a big part of Imerys's business. The company, formerly called Luzenac, primarily sells the mineral for industrial purposes. But until 2006, it also fought any suggestion that talc could be a potential carcinogen. In the late 1990s, according to a Luzenac memo introduced at the trial, executives visited the head of epidemiology at the University of California at Irvine for advice on how "to stop the rumor about Ovarian cancer." One suggestion: Get "two or three experts from the club" to make the scientific case. "The club" could refer to independent scientists Luzenac had worked with before, but Fox's lawyers argued for a more sinister interpretation—that these were scientists who would respond to industry pressure. They also suggested that Luzenac and J&J exerted influence over a government group. In 2000 scientists with the National Toxicology Program, part of the U.S. Department of Health and Human Services, voted 13-2 to list talc, used perineally, as a possible human carcinogen, according to Fox's lawyers, but the companies persuaded the NTP to defer an official decision on the status of talc. A Luzenac executive, Richard Zazenski, wrote to a colleague afterward: "We, the talc industry, dodged a bullet in December, based entirely over the confusion of the definition issue." He was referring to ambiguity over the composition of the talc studied because, until the early 1970s, some powder contained naturally occurring asbestos fibers. He also discussed a coming NTP review, saying, "Time to come up with more confusion!" Imerys declined to comment on the specifics of the trial, but one witness for the defense offered the possibility that Zazenski was joking. Goodrich, the J&J spokeswoman, said any suggestion by Fox's lawyers of improper influence is "merely an unsubstantiated allegation."

In 2006, the IARC, the WHO cancer agency, declared that perineal use of cosmetic-grade talc was possibly carcinogenic. It cited "a modest, but unusually consistent, excess in risk" and also noted that bias in the studies couldn't be ruled out. Publicly, Luzenac and J&J tried to diminish the significance of the designation; red meat and coffee are also included in this group of possible carcinogens.

Before the year ended, however, Luzenac stopped backing studies to prove talc's safety because the "horse has already left the barn," wrote one executive, noting that cosmetic companies had also cut funding. One of their primary arguments for doing so, he said, was that there were already too many studies showing an association with ovarian cancer "to stem the tide of negative sentiment." More important, Luzenac added a warning on the safety data sheet included with the 2,000-pound bags of talc it delivers to J&J: Perineal use of the powder is a possible risk factor for ovarian cancer.

Johnson & Johnson says it will continue to defend the safety of talc, and it does so on its website. There, in a section explaining its policies about ingredients, the company addresses concerns over formaldehyde, parabens, phthalates, and triclosan—chemicals with damaged reputations, and worse. In every case, J&J states that the chemicals haven't been proven harmful or that they were used in small enough amounts to be safe, but the company decided to remove them from its products anyway. "We understand that from your perspective, government regulations may not be your only consideration when it comes to the personal-care products you and your family use," it says about parabens. For phthalates, the company says it recognizes that "the best way to keep your confidence was not to use it at all."

"We, the talc industry, dodged a bullet in December.... Time to come up with more confusion!"

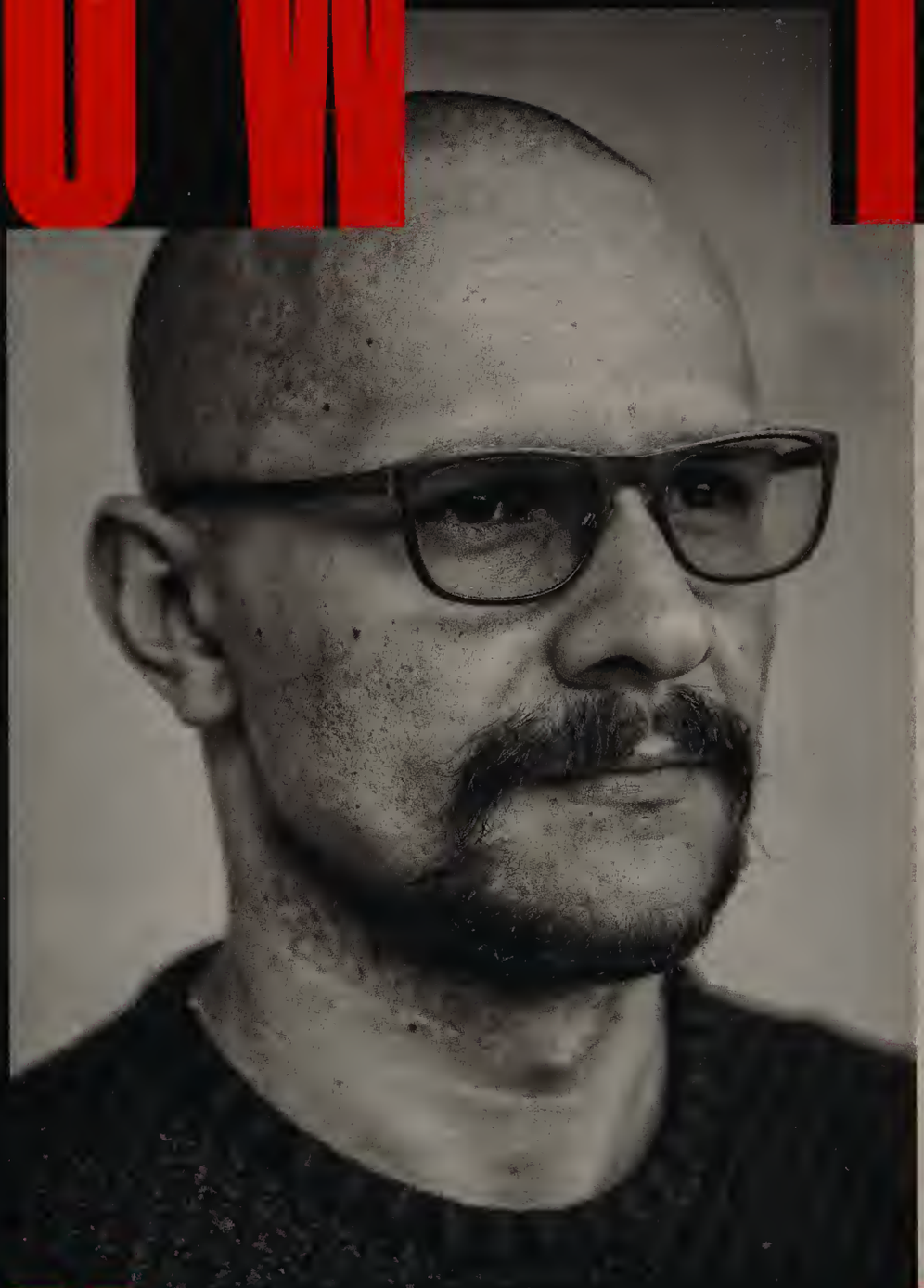
Why not apply that same standard to talc? Goodrich said the company listens when consumers raise concerns about ingredients. But "few ingredients have the same demonstrated performance, mildness and safety profile as cosmetic talc."

The first woman to sue Johnson & Johnson for not warning of the risks of talcum powder was Deane Berg, who was diagnosed with ovarian cancer in 2007. She says she turned down a $1.3 million out-of-court settlement because she didn't want to sign a confidentiality clause. Her case went to trial in 2013 in a South Dakota federal court as she was in remission. The jury found J&J was negligent, but didn't award Berg any damages.

After the Fox verdict, 17,000 people contacted her attorneys at Beasley Allen; the firm is looking into 2,000 of those, in addition to 5,000 potential claims it was already investigating. Its next case will be tried in the same St. Louis circuit court as Fox's, which has a reputation for being sympathetic to plaintiffs. Gloria Ristesund's trial is set for April. She used Baby Powder for 40 years and was diagnosed with ovarian cancer in 2011.

Among those waiting their turn is Tenesha Farrar, who was diagnosed with Stage 3 ovarian cancer in 2013 and is represented by the Lanier Law Firm. Farrar, who's 40 and black, says she'd used Baby Powder and Shower to Shower (which J&J sold to Valeant in 2012) for the last two decades. "My grandmother and mother used it, and I learned from them," she says. After hearing about the J&J marketing document, she began crying. "I can't believe they singled us out." Farrar had chemotherapy and a full hysterectomy. She had to take off five months from her work as a clerk in a dialysis clinic outside St. Louis. She lost her health insurance because she exceeded the policy limits and had to skip her last chemo treatment. She and her husband eventually filed for bankruptcy. She's back at work now. "I have five children who depend on me," she says. "I will never use another J&J product again." B

HOW TO ANEL



Andrés Sepúlveda claims he spent eight years disrupting campaigns across Latin America

By Jordan Robertson, Michael Riley, and Andrew Willis

Photographs by Juan Arredondo

HACK ELECTION

It was just before midnight when Enrique Peña Nieto declared victory as the newly elected president of Mexico. Peña Nieto was a lawyer and a millionaire, from a family of mayors and governors. His wife was a telenovela star. He beamed as he was showered with red, green, and white confetti at the Mexico City headquarters of the Institutional Revolutionary Party, or PRI, which had ruled for more than 70 years before being forced out in 2000. Returning the party to power on that night in July 2012, Peña Nieto vowed to tame drug violence, fight corruption, and open a more transparent era in Mexican politics.

Two thousand miles away, in an apartment in Bogotá's upscale Chicó Navarra neighborhood, Andrés Sepúlveda sat before six computer screens. Sepúlveda is Colombian, bricklike, with a shaved head, goatee, and a tattoo of a QR code containing an encryption key on the back of his head. On his nape are the words "</head>" and "<body>" stacked atop each other, dark riffs on coding. He was watching a live feed of Peña Nieto's victory party, waiting for an official declaration of the results.

When Peña Nieto won, Sepúlveda began destroying evidence. He drilled holes in flash drives, hard drives, and cell phones, fried their circuits in a microwave, then broke them to shards with a hammer. He shredded documents and flushed them down the toilet and erased servers in Russia and Ukraine rented anonymously with Bitcoins. He was dismantling what he says was a secret history of one of the dirtiest Latin American campaigns in recent memory.

For eight years, Sepúlveda, now 31, says he traveled the continent rigging major political campaigns. With a budget of $600,000, the Peña Nieto job was by far his most complex. He led a team of hackers that stole campaign strategies, manipulated social media to create false waves of enthusiasm and derision, and installed spyware in opposition offices, all to help Peña Nieto, a right-of-center candidate, eke out a victory. On that July night, he cracked bottle after bottle of Colón Negra beer in celebration. As usual on election night, he was alone.

Sepúlveda's career began in 2005, and his first jobs were small—mostly defacing campaign websites and breaking into opponents' donor databases. Within a few years he was assembling teams that spied, stole, and smeared on behalf of presidential campaigns across Latin America. He wasn't cheap, but his services were extensive. For $12,000 a month, a customer hired a crew that could hack smartphones, spoof and clone Web pages, and send mass e-mails and texts. The premium package, at $20,000 a month, also included a full range of digital interception, attack, decryption, and defense. The jobs were carefully laundered through layers of middlemen and consultants. Sepúlveda says many of the candidates he helped might not even have known about his role; he says he met only a few.

His teams worked on presidential elections in Nicaragua, Panama, Honduras, El Salvador, Colombia, Mexico, Costa Rica, Guatemala, and Venezuela. Campaigns mentioned in this story were contacted through former and current spokespeople; none but Mexico's PRI and the campaign of Guatemala's National Advancement Party would comment.

As a child, he witnessed the violence of Colombia's Marxist guerrillas. As an adult, he allied with a right wing emerging across Latin America. He believed his hacking was no more diabolical than the tactics of those he opposed, such as Hugo Chávez and Daniel Ortega.

Many of Sepúlveda's efforts were unsuccessful, but he has enough wins that he might be able to claim as much influence over the political direction of modern Latin America as anyone in the 21st century. "My job was to do actions of dirty war and psychological operations, black propaganda, rumors—the whole dark side of politics that nobody knows exists but everyone can see," he says in Spanish, while sitting at a small plastic table in an outdoor courtyard deep within the heavily fortified offices of Colombia's attorney general's office. He's serving 10 years in prison for charges including use of malicious software, conspiracy to commit crime, violation of personal data, and espionage, related to hacking during Colombia's 2014 presidential election. He has agreed

to tell his full story for the first time, hoping to convince the public that he's rehabilitated–and gather support for a reduced sentence.

Usually, he says, he was on the payroll of Juan José Rendón, a Miami-based political consultant who's been called the Karl Rove of Latin America. Rendón denies using Sepúlveda for anything illegal, and categorically disputes the account Sepúlveda gave *Bloomberg Businessweek* of their relationship, but admits knowing him and using him to do website design. "If I talked to him maybe once or twice, it was in a group session about that, about the Web," he says. "I don't do illegal stuff at all. There is negative campaigning. They don't like it–OK. But if it's legal, I'm gonna do it. I'm not a saint, but I'm not a criminal." While Sepúlveda's policy was to destroy all data at the completion of a job, he left some documents with members of his hacking teams and other trusted third parties as a secret "insurance policy."

Sepúlveda provided *Bloomberg Businessweek* with what he says are e-mails showing conversations between him, Rendón, and Rendón's consulting firm concerning hacking and the progress of campaign-related cyber attacks. Rendón says the e-mails are fake. An analysis by an independent computer security firm said a sample of the e-mails they examined appeared authentic. Some of Sepúlveda's descriptions of his actions match published accounts of events during various election campaigns, but other details couldn't be independently verified. One person working on the campaign in Mexico, who asked not to be identified out of fear for his safety, substantially confirmed Sepúlveda's accounts of his and Rendón's roles in that election.

Sepúlveda says he was offered several political jobs in Spain, which he says he turned down because he was too busy. On the question of whether the U.S. presidential campaign is being tampered with, he is unequivocal. "I'm 100 percent sure it is," he says.

Sepúlveda grew up poor in Bucaramanga, eight hours north of Bogotá by car. His mother was a secretary. His father was an activist, helping farmers find better crops to grow than coca plants, and the family moved constantly because of death threats from drug traffickers. His parents divorced, and by the age of 15, after failing school, he went to live with his father in Bogotá and used a computer for the first time. He later enrolled in a local technology school and, through a friend there, learned to code.

In 2005, Sepúlveda's older brother, a publicist, was helping with the congressional campaigns of a party aligned with then-Colombian President Alvaro Uribe. Uribe was a hero of the brothers, a U.S. ally who strengthened the military to fight the Revolutionary Armed Forces of Colombia (FARC). During a visit to party headquarters, Sepúlveda took out his laptop and began scanning the office's wireless network. He easily tapped into the computer of Rendón, the party's strategist, and downloaded Uribe's work schedule and upcoming speeches. Sepúlveda says Rendón was furious–then hired him on the spot. Rendón says this never happened.

For decades, Latin American elections were rigged, not won, and the methods were pretty straightforward. Local fixers would hand out everything from small appliances to cash in exchange for votes. But in the 1990s, electoral reforms swept the region. Voters were issued tamper-proof ID cards, and nonpartisan institutes ran the elections in several countries. The modern campaign, at least a version North Americans might recognize, had arrived in Latin America.

Rendón had already begun a successful career based partly, according to his critics–and more than one lawsuit–on a mastery of dirty tricks and rumormongering. (In 2014, El Salvador's then-President Carlos Mauricio Funes accused Rendón of orchestrating dirty war campaigns throughout Latin America. Rendón sued in Florida for defamation, but the court dismissed the case on the grounds that Funes couldn't be sued for his official acts.) The son of democracy activists, he studied psychology and worked in advertising before advising presidential candidates in his native Venezuela. After accusing then-President Chávez of vote rigging in 2004, he left and never went back.

Sepúlveda's first hacking job, he says, was breaking into an Uribe rival's website, stealing a database of e-mail addresses, and spamming the accounts with disinformation. He was paid $15,000 in cash for a month's work, five times as much as he made in his previous job designing websites.

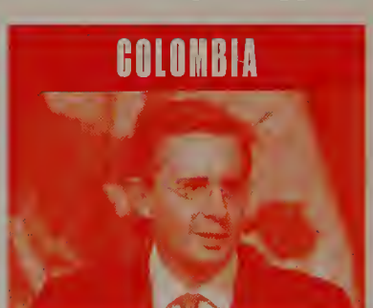
Sepúlveda was dazzled by Rendón, who owned a fleet of luxury cars, wore big flashy watches, and spent thousands on tailored coats. Like Sepúlveda, he was a perfectionist. His staff was expected to arrive early and work late. "I was very young," Sepúlveda says. "I did what I liked, I was paid well and traveled. It was the perfect job." But more than anything, their right-wing politics aligned. Sepúlveda says he saw Rendón as a genius and a mentor. A devout Buddhist and practitioner of martial arts, according to his own website, Rendón cultivated an image of mystery and menace, wearing only all-black in public, including the occasional samurai robe. On his website he calls himself the political consultant who is the "best paid, feared the most, attacked the most, and also the most demanded and most efficient." Sepúlveda would have a hand in that.

Rendón, says Sepúlveda, saw that hackers could be completely integrated into a modern political operation, running attack ads, researching the opposition, and finding ways to suppress a foe's turnout. As for Sepúlveda, his insight was to understand that voters trusted what they thought were spontaneous expressions of real people on social media more than they did experts on television and in newspapers. He knew that accounts could be faked and social media trends fabricated, all relatively cheaply. He wrote a software program, now called Social Media Predator, to manage and direct a virtual army of fake Twitter accounts. The software let him quickly change names, profile pictures, and biographies to fit any need. Eventually, he discovered, he could manipulate the public debate as easily as moving pieces on a chessboard–or, as he puts it, "When I realized that people believe what the Internet says more than reality, I discovered that I had the power to make people believe almost anything."

According to Sepúlveda, his payments were made in cash, half upfront. When he traveled, he used a fake passport and stayed alone in a hotel, far from campaign staff. No one could bring a smartphone or camera into his room.

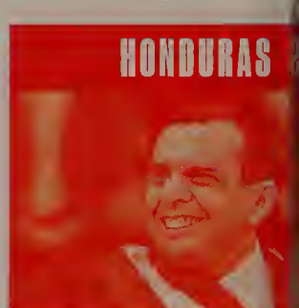
DIRTY WORK

COLOMBIA



Supported reelection of Alvaro Uribe for president, 2006; congressional elections, 2006; failed campaign of Oscar Iván Zuluaga for president, 2014

HONDURAS



Supported Porfirio Lobo Sosa, elected president 2009

NICARAGUA

Against Daniel Ortega, 2011

GETTY IMAGES (4)

Most jobs were initiated in person. Sepúlveda says Rendón would give him a piece of paper with target names, e-mail addresses, and phone numbers. Sepúlveda would take the note to his hotel, enter the data into an encrypted file, then burn the page or flush it down the toilet. If Rendón needed to send an e-mail, he used coded language. To "caress" meant to attack; to "listen to music" meant to intercept a target's phone calls.

Rendón and Sepúlveda took pains not to be seen together. They communicated over encrypted phones, which they replaced every two months. Sepúlveda says he sent daily progress reports and intelligence briefings from throwaway e-mail accounts to a go-between in Rendón's consulting firm.

Each job ended with a specific, color-coded destruct sequence. On election day, Sepúlveda would purge all data classified as "red." Those were files that could send him and his handlers to prison: intercepted phone calls and e-mails, lists of hacking victims, and confidential briefings he prepared for the campaigns. All phones, hard drives, flash drives, and computer servers were physically destroyed. Less-sensitive "yellow" data—travel schedules, salary spreadsheets, fundraising plans—were saved to an encrypted thumb drive and given to the campaigns for one final review. A week later it, too, would be destroyed.

For most jobs, Sepúlveda assembled a crew and operated out of rental homes and apartments in Bogotá. He had a rotating group of 7 to 15 hackers brought in from across Latin America, drawing on the various regions' specialties. Brazilians, in his view, develop the best malware. Venezuelans and Ecuadoreans are superb at scanning systems and software for vulnerabilities. Argentines are mobile intercept artists. Mexicans are masterly hackers in general but talk too much. Sepúlveda used them only in emergencies.

MEXICO

Supported Enrique Peña Nieto, over a three-year period

VENEZUELA

Against Chávez and Maduro in 2012 and 2013

COSTA RICA

Supported Johnny Araya, failed presidential candidate for center-left National Liberation Party, 2014 election

PANAMA

Supported Juan Carlos Navarro, presidential candidate for the center-left Democratic Revolutionary Party, 2014 election

The assignments lasted anywhere from a few days to several months. In Honduras, Sepúlveda defended the communications and computer systems of presidential candidate Porfirio Lobo Sosa from hackers employed by his competitors. In Guatemala, he digitally eavesdropped on six political and business figures, and says he delivered the data to Rendón on encrypted flash drives at dead drops. (Sepúlveda says it was a small job for a client of Rendón's who has ties to the right-wing National Advancement Party, or PAN. The PAN says it never hired Rendón and has no knowledge of any of his claimed activities.) In Nicaragua in 2011, Sepúlveda attacked Ortega, who was running for his third presidential term. In one of the rare jobs in which he was working for a client other than Rendón, he broke into the e-mail account of Rosario Murillo, Ortega's wife and the government's chief spokeswoman, and stole a trove of personal and government secrets.

In Venezuela in 2012, the team abandoned its usual caution, animated by disgust with Chávez. With Chávez running for his fourth term, Sepúlveda posted an anonymized YouTube clip of himself rifling through the e-mail of one of the most powerful people in Venezuela, Diosdado Cabello, then president of the National Assembly. He also went outside his tight circle of trusted hackers and rallied Anonymous, the hacktivist group, to attack Chávez's website.

After Sepúlveda hacked Cabello's Twitter account, Rendón seemed to congratulate him. "*Eres noticia* :)"—you're news—he wrote in a Sept. 9, 2012, e-mail, linking to a story about the breach. (Rendón says he never sent such an e-mail.) Sepúlveda provided screen shots of a dozen e-mails, and many of the original e-mails, showing that from November 2011 to September 2012 Sepúlveda sent long lists of government websites he hacked for various campaigns to a senior member of Rendón's consulting firm, lacing them with hacker slang ("Owned!" read one). Two weeks before Venezuela's presidential election, Sepúlveda sent screen shots showing how he'd hacked Chávez's website and could turn it on and off at will.

Chávez won but died five months later of cancer, triggering an emergency election, won by Nicolás Maduro. The day before Maduro claimed victory, Sepúlveda hacked his Twitter account and posted allegations of election fraud. Blaming "conspiracy hackings from abroad," the government of Venezuela disabled the Internet across the entire country for 20 minutes.

In Mexico, Sepúlveda's technical mastery and Rendón's grand vision for a ruthless political machine fully came together, fueled by the huge resources of the PRI. The years under President Felipe Calderón and the National Action Party (also, as in Partido Acción Nacional, PAN) were plagued by a grinding war against the drug cartels, which made kidnappings, street assassinations, and beheadings ordinary. As 2012 approached, the PRI

offered the youthful energy of Peña Nieto, who'd just finished a successful term as governor.

Sepúlveda didn't like the idea of working in Mexico, a dangerous country for involvement in public life. But Rendón persuaded him to travel there for short trips, starting in 2008, often flying him in on his private jet. Working at one point in Tabasco, on the sweltering Caribbean coast, Sepúlveda hacked a political boss who turned out to have connections to a drug cartel. After Rendón's security team learned of a plan to kill Sepúlveda, he spent a night in an armored Chevy Suburban before returning to Mexico City.

Mexico is effectively a three-party system, and Peña Nieto faced opponents from both right and left. On the right, the ruling PAN nominated Josefina Vázquez Mota, its first female presidential candidate. On the left, the Democratic Revolution Party, or PRD, chose Andrés Manuel López Obrador, a former Mexico City mayor.

Early polls showed Peña Nieto 20 points ahead, but his supporters weren't taking chances. Sepúlveda's team installed malware in routers in the headquarters of the PRD candidate, which let him tap the phones and computers of anyone using the network, including the candidate. He took similar steps against PAN's Vázquez Mota. When the candidates' teams prepared policy speeches, Sepúlveda had the details as soon as a speechwriter's fingers hit the keyboard. Sepúlveda saw the opponents' upcoming meetings and campaign schedules before their own teams did.

Money was no problem. At one point, Sepúlveda spent $50,000 on high-end Russian software that made quick work of tapping Apple, BlackBerry, and Android phones. He also splurged on the very best fake Twitter profiles; they'd been maintained for at least a year, giving them a patina of believability.

Sepúlveda managed thousands of such fake profiles and used the accounts to shape discussion around topics such as Peña Nieto's plan to end drug violence, priming the social media pump with views that real users would mimic. For less nuanced work, he had a larger army of 30,000 Twitter bots, automatic posters that could create trends. One conversation he started stoked fear that the more López Obrador rose in the polls, the lower the peso would sink. Sepúlveda knew the currency issue was a major vulnerability; he'd read it in the candidate's own internal staff memos.

Sepúlveda's head. The upper tattoo is a QR code containing an encryption key

Just about anything the digital dark arts could offer to Peña Nieto's campaign or important local allies, Sepúlveda and his team provided. On election night, he had computers call tens of thousands of voters with prerecorded phone messages at 3 a.m. in the critical swing state of Jalisco. The calls appeared to come from the campaign of popular left-wing gubernatorial candidate Enrique Alfaro Ramírez. That angered voters—that was the point—and Alfaro lost by a slim margin. In another governor's race, in Tabasco, Sepúlveda set up fake Facebook accounts of gay men claiming to back a conservative Catholic candidate representing the PAN, a stunt designed to alienate his base. "I always suspected something was off," the candidate, Gerardo Priego, said recently when told how Sepúlveda's team manipulated social media in the campaign.

In May, Peña Nieto visited Mexico City's Ibero-American University and was bombarded by angry chants and boos from students. The rattled candidate retreated with his bodyguards into an adjacent building, hiding, according to some social media posts, in a bathroom. The images were a disaster. López Obrador soared.

The PRI was able to recover after one of López Obrador's consultants was caught on tape asking businessmen for $6 million to fund his candidate's broke campaign, in possible violation of Mexican laws. Although the hacker says he doesn't know the origin of that particular recording, Sepúlveda and his team had been intercepting the communications of the consultant, Luis Costa Bonino, for months. (On Feb. 2, 2012, Rendón appears to have sent him three e-mail addresses and a cell phone number belonging to Costa Bonino in an e-mail called "Job.") Sepúlveda's team disabled the consultant's personal website and directed journalists to a clone site. There they posted what looked like a long defense written by Costa Bonino, which casually raised questions about whether his Uruguayan roots violated Mexican restrictions on foreigners in elections. Costa Bonino left the campaign a few days later. He indicated recently that he knew he was being spied on, he just didn't know how. It goes with the trade in Latin America: "Having a phone hacked by the opposition is not a novelty. When I work on a campaign, the assumption is that everything I talk about on the phone will be heard by the opponents."

The press office for Peña Nieto declined to comment. A spokesman for the PRI said the party has no knowledge of Rendón working for Peña Nieto's or any other PRI campaign. Rendón says he has worked on behalf of PRI candidates in Mexico for 16 years, from August 2000 until today.

In 2012, Colombian President Juan Manuel Santos, Uribe's successor, unexpectedly restarted peace talks with the FARC, hoping to end a 50-year war. Furious, Uribe, whose father was killed by FARC guerrillas, created a party and backed an alternative candidate, Oscar Iván Zuluaga, who opposed the talks.

Rendón, who was working for Santos, wanted Sepúlveda to join his team, but Sepúlveda turned him down. He considered Rendón's willingness to work for a candidate supporting peace with the FARC a betrayal and suspected the consultant was going soft, choosing money over principles. Sepúlveda says he was motivated by ideology first and money second, and that if he wanted to get rich he could have made a lot more hacking financial systems than elections. For the first time, he decided to oppose his mentor.

Sepúlveda went to work for the opposition, reporting directly to Zuluaga's campaign manager, Luis Alfonso Hoyos. (Zuluaga denies any knowledge of hacking; Hoyos couldn't be reached for comment.) Together, Sepúlveda says, they came up with a plan to discredit the president by showing that the guerrillas continued to traffic in drugs and violence even as they talked about peace. Within months, Sepúlveda hacked the phones and e-mail accounts of more than 100 militants, including the FARC's leader, Rodrigo Londoño, also known as Timochenko. After assembling a thick file on the FARC, including evidence of the group's suppression of peasant votes in the countryside, Sepúlveda agreed to accompany Hoyos to the offices of a Bogotá TV news program and present the evidence.

It may not have been wise to work so doggedly and publicly against a party in power. A month later, Sepúlveda was smoking on the terrace of his Bogotá office when he saw a caravan of police vehicles pull up. Forty black-clad commandos raided the office to arrest him. Sepúlveda blamed his carelessness at the TV station for the arrest. He believes someone there turned him in. In court, he wore a bulletproof vest and sat surrounded by guards

RENDON: EL COMERCIO/GDA/ZUMA PRESS

with bomb shields. In the back of the courtroom, men held up pictures of his family, making a slashing gesture across their throats or holding a hand over their mouths—stay silent or else. Abandoned by former allies, he eventually pleaded guilty to espionage, hacking, and other crimes in exchange for a 10-year sentence.

Three days after arriving at Bogotá's La Picota prison, he went to the dentist and was ambushed by men with knives and razors, but was saved by guards. A week later, guards woke him and rushed him from his cell, saying they had heard about a plot to shoot him with a silenced pistol as he slept. After national police intercepted phone calls revealing yet another plot, he's now in solitary confinement at a maximum-security facility in a rundown area of central Bogotá. He sleeps with a bulletproof blanket and vest at his bedside, behind bombproof doors. Guards check on him every hour. As part of his plea deal, he says, he's turned government witness, helping investigators assess possible cases against the former candidate, Zuluaga, and his strategist, Hoyos. Authorities issued an indictment for the arrest of Hoyos, but according to Colombian press reports he's fled to Miami.

When Sepúlveda leaves for meetings with prosecutors at the Bunker, the attorney general's Bogotá headquarters, he travels in an armed caravan including six motorcycles speeding through the capital at 60 mph, jamming cell phone signals as they go to block tracking of his movements or detonation of roadside bombs.

Juan José Rendón, political consultant

In July 2015, Sepúlveda sat in the small courtyard of the Bunker, poured himself a cup of coffee from a thermos, and took out a pack of Marlboro cigarettes. He says he wants to tell his story because the public doesn't grasp the power hackers exert over modern elections or the specialized skills needed to stop them. "I worked with presidents, public figures with great power, and did many things with absolutely no regrets because I did it with full conviction and under a clear objective, to end dictatorship and socialist governments in Latin America," he says. "I have always said that there are two types of politics—what people see and what really makes things happen. I worked in politics that are not seen."

Sepúlveda says he's allowed a computer and a monitored Internet connection as part of an agreement to help the attorney general's office track and disrupt drug cartels using a version of his Social Media Predator software. The government will not confirm or deny that he has access to a computer, or what he's using it for. He says he has modified Social Media Predator to counteract the kind of sabotage he used to specialize in, including jamming candidates' Facebook walls and Twitter feeds. He's used it to scan 700,000 tweets from pro-Islamic State accounts to learn what makes a good terror recruiter. Sepúlveda says the program has been able to identify ISIS recruiters minutes after they create Twitter accounts and start posting, and he hopes to share the information with the U.S. or other countries fighting the Islamist group. Samples of Sepúlveda's code evaluated by an independent company found it authentic and substantially original.

Sepúlveda's contention that operations like his happen on every continent is plausible, says David Maynor, who runs a security testing company in Atlanta called Errata Security. Maynor says he occasionally gets inquiries for campaign-related jobs. His company has been asked to obtain e-mails and other documents from candidates' computers and phones, though the ultimate client is never disclosed. "Those activities do happen in the U.S., and they happen all the time," he says.

In one case, Maynor was asked to steal data as a security test, but the individual couldn't show an actual connection to the campaign whose security he wanted to test. In another, a potential client asked for a detailed briefing on how a candidate's movements could be tracked by switching out the user's iPhone for a bugged clone. "For obvious reasons, we always turned them down," says Maynor, who declines to name the candidates involved.

Three weeks before Sepúlveda's arrest, Rendón was forced to resign from Santos's campaign amid allegations in the press that he took $12 million from drug traffickers and passed part of it on to the candidate, something he denies.

According to Rendón, Colombian officials interviewed him shortly afterward in Miami, where he keeps a home. Rendón says that Colombian investigators asked him about Sepúlveda and that he told them Sepúlveda's role was limited to Web development.

Rendón denies working with Sepúlveda in any meaningful capacity. "He says he worked with me in 20 places, and the truth is he didn't," Rendón says. "I never paid Andrés Sepúlveda a peso."

Last year, based on anonymous sources, the Colombian media reported that Rendón was working for Donald Trump's presidential campaign. Rendón calls the reports untrue. The campaign did approach him, he says, but he turned them down because he dislikes Trump. "To my knowledge we are not familiar with this individual," says Trump's spokeswoman, Hope Hicks. "I have never heard of him, and the same goes for other senior staff members." But Rendón says he's in talks with another leading U.S. presidential campaign—he wouldn't say which—to begin working for it once the primaries wrap up and the general election begins. B

—With Carlos Manuel Rodríguez and Matthew Bristow

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THE GREATEST STORY EVER TOLD AGAIN AND AGAIN

Audiences flock to faith-based films. By David Walters

David A.R. White was raised in a Mennonite household outside Dodge City, Kan., and went to the movies only one time in his first 18 years. "I was at a friend's house, and he took me to *Grease*. I was 8 years old. I didn't know what we were doing," the 45-year-old filmmaker says, laughing. "And then Olivia Newton-John showed up in her black leather pants, and I thought for sure I was going to hell."

In the years that followed—after playing Kurt von Trapp in a school production of *The Sound of Music*—White became fascinated with the entertainment industry. At 19, he moved to Los Angeles and found his niche in acting, first in the Burt Reynolds sitcom *Evening Shade* and eventually in independent Christian productions. In 2005 he co-founded Pure Flix Entertainment, what he calls a "Christ-centered" production-distribution company; he spent close to a decade churning out films that were popular with the Christian bookstore market but failed to score at the multiplex.

Everything changed two years ago. In 2014, White produced and starred in *God's Not Dead*, an unapologetic, unsubtle Christian drama that became a word-of-mouth hit, earning $62 million against a shoestring $1.2 million budget. Today, the film—about a college student whose faith is challenged by an atheistic philosophy professor—is the fifth-most-profitable movie by percentage in cinema history, with a return on investment of 2,627 percent (positioning it, ironically, directly behind *Grease*).

God's Not Dead was part of a miniwave of faith-based films that year. Now we're seeing a flood of biblical proportions. When its sequel—*God's Not Dead 2*, about a public school teacher on trial for mentioning Jesus in her classroom—hits theaters on April 1, it joins a conspicuously crowded market of Lent season releases, including *Miracles From Heaven*, the story of a sick child whose recovery defies medical science, and *Risen*, which approaches the Resurrection from the perspective of a Roman centurion.

Industry watchers assumed that *Miracles* and *Risen* would earn money slowly and steadily leading up to the Easter holiday. Instead, they surged in their opening weekends. *Risen* out-earned buzzy horror flick *The Witch* and Jesse Owens biopic *Race*, trailing only Marvel's *Deadpool* and DreamWorks Pictures' *Kung Fu Panda 3*. *Miracles* recouped its $13 million production budget in just four days, knocking the J.J. Abrams-produced *10 Cloverfield Lane* out of the top three earners for the week. Explain it however you want: savvy positioning or divine intervention. But when it comes to box office returns, God is good and only getting better.

There's nothing new about Bible films attracting rapturous audiences. After all, the movies are as old as the silver screen itself. Cecil B. DeMille's *The Ten Commandments* was nominated for the Academy Award for Best Picture in 1956, and it's still the sixth-highest-grossing movie of all time domestically when adjusted for inflation. "What's different is people calling [these films] faith-based," says director Cyrus Nowrasteh, whose film *The Young Messiah*, produced for an estimated $16 million and distributed by Focus Features, premiered last month. "When I was a kid, we went to see *The Bible* and *Ben-Hur*. They were just big movies, and people went."

Hollywood's view of Christian films grew more agnostic in the ensuing decades. A 1977 international production of *Jesus of Nazareth* became a small-screen success. Martin Scorsese's *The Last Temptation of Christ* (1988) was a heretical lightning rod. But for the most part, spiritual subject matters were ignored. Then in 2004, with the religious market largely relegated to the low-budget, direct-to-video format, Mel Gibson's *The Passion of the Christ* banked $83 million in its opening weekend, on the way to a mammoth $611 million worldwide gross, shattering expectations of what a Christian production could earn.

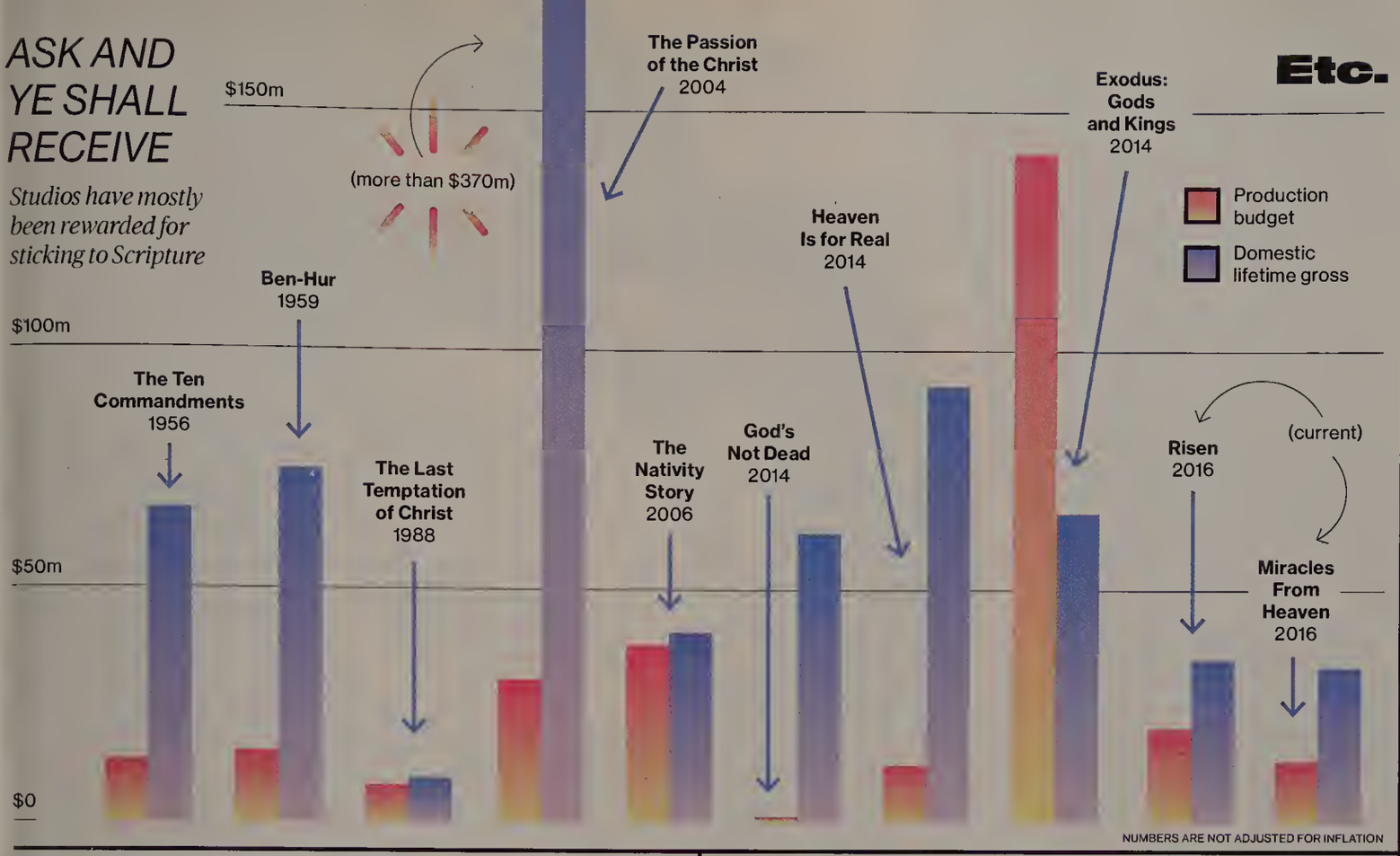
"All of a sudden, everyone was interested," says White. Some major studios cranked out a stream of high-profile commercial hits, from the allegorical (Walt Disney's *The Chronicles of Narnia*, 2005) to the traditional (New Line Cinema's *The Nativity Story*, 2006) to the feel-good inspirational (Warner Bros.' *The Blind Side*, 2009), while others—including 20th Century Fox, the Weinstein Co., and Lionsgate—announced faith-based labels or right-of-first-refusal partnerships with Christian filmmakers. But appealing to Christian audiences turned out to be more complicated than simply making movies about Jesus. If you've never heard of *The Ultimate Gift* or *The Last Sin Eater*—both put out by FoxFaith, Fox's faith-based unit—there's a reason for that. Within a few years, most of those divisions and deals had withered and died.

"Pointing at *The Passion* and saying, 'This is a great model of what faith-based films can do' is like pointing at *Star Wars* and saying, 'This is what a sci-fi movie can do.' It's the ultimate example of a particular genre," says Rich Peluso, senior vice president of Sony's Christian shingle, Affirm Films, which has fared better than most. (Affirm is behind both *Miracles* and *Risen*, as well as 2014's *Heaven Is for Real*, which grossed more than $91 million in the U.S.) "But it did cause people to pay attention to the fact that the faith community will respond to a film and come out in droves."

The most successful Christian films of the last few years have largely defied Hollywood convention. Star power takes a back seat to a loud-and-clear message. Many of the leads in *God's Not Dead* and its sequel—Kevin Sorbo, Dean Cain, Melissa Joan

ASK AND YE SHALL RECEIVE

Studios have mostly been rewarded for sticking to Scripture



Hart—reached peak fame in the mid-'90s. Independent producers and distributors like White's Pure Flix have found a foothold in the space by providing supplemental study material for church groups and launching a home-streaming service in the Netflix mold. Another outfit, EchoLight Studios—whose chief executive officer is former Pennsylvania senator and one-time presidential candidate Rick Santorum—has experimented with a distribution model in which films are first released to church audiences to drum up grass-roots support.

Ultimately, conventional wide-release engagement is still the goal. "We're looking for the same thing that Sony and Warner Bros. are looking for," says EchoLight President Jeff Sheets. "That's ubiquity. We want our movies to be available as soon as possible to as many people as possible." If Tinseltown values a great story above all, how can it resist the Greatest Story Ever Told? "There's an audience out there for these films that isn't necessarily Christian," *The Young Messiah*'s Nowrasteh says. "It's not as if secular people can't appreciate them."

Chasing crossover appeal can be risky, though. Take *Exodus: Gods and Kings*, director Ridley Scott's 2014 Moses-Pharaoh showdown, which went heavy on Christian Bale and light on actual Christianity and failed to recoup even half of its $140 million price tag domestically. Darren Aronofsky's *Noah*, starring Russell Crowe as the Old Testament ark builder, did better at the box office the same year but drew protests from faith groups for not being true to Scripture. "Aronofsky is a self-proclaimed atheist," White says. (Aronofsky has described himself in interviews as a humanist, not an atheist.) "The studio heads aren't really interested in this market, nor do they really know it, so they're thinking, We're spending a hundred million, so let's try to make it a crossover movie—a disaster epic. Let's do the least amount that we have to do to gather the faith audience, because they're stupid; they'll come to anything that has the Bible in it. But the problem is, the faith audience isn't stupid. They've been treated by Hollywood for years and years as if they are, and they're tired of that."

A dozen years after the post-*Passion* boom, Hollywood is starting to learn from the sins of the past, scaling back gluttonous budgets and vowing not to bear false witness in production and promotion. "Studios like Sony have seen that these movies are low-cost, and, if marketed correctly, they can be very profitable," says Matthew Belloni, executive editor of the *Hollywood Reporter*. "It's hit-and-miss, but the downside isn't big. If one thing works, everyone will try to copy it." Paramount Pictures has two faith-based films on its calendar: a remake of *Ben-Hur*, for which it enlisted Mark Burnett, the TV super-producer behind 2013's most-watched miniseries, *The Bible*; and *Same Kind of Different As Me*, an inspirational love-thy-neighbor drama starring Renée Zellweger, based on a best-selling memoir that got 4.5 out of 5 stars on Christianbooks.com. In May, upstart distributor Broad Green Pictures will try its luck with *Last Days in the Desert*, with Ewan McGregor as Jesus and three-time Oscar winner Emmanuel Lubezki as cinematographer.

"Success begets success," Affirm Films' Peluso says. "As these films make a bigger impact, they start to attract other producers, directors, and talent who say, 'Wow, this can really work.'" White's grateful to have the zeitgeist on his side, but he's not depending on it. "*God's Not Dead* talks a lot about religious freedoms and liberties. It's very current to what's happening in our society," he says. "And it was a great story—a classic story of David overcoming Goliath. It's our hope, certainly, that [the sequel] will go above and beyond, but we'll serve our audience first."

EchoLight's big play for mainstream success will come in September, with the release of *Vanished: Left Behind—Next Generation*, a young-adult Rapture drama. Starring a crop of MTV talent, it invites comparisons to HBO's *The Leftovers* and dystopian feature films like *Divergent*. While the Christian base may be more than enough to make the film a righteous profit, Sheets is banking on engagement beyond the Sunday school crowd. "One of the greatest compliments I received was from a Lionsgate executive" who saw an early cut of the film, he says. "She told me, 'In the same way that you don't have to believe in vampires to watch *Twilight*, you don't have to be a follower of Jesus to watch *Vanished*.' She's exactly right." B

WEAR SOME FLARE

How to style this season's hottest cropped pants

Play up the silhouette with a tailored or form-fitting blouse, tucked in. Prefer to tone it down? Pop on a long blazer.

This look is all about proportion. Stick to options with a higher waist, which helps balance the length.

Keep accessories simple—this style is dramatic enough on its own. A woven saddle bag finishes things off.

Audra pants
$630; sold at Canary boutique, 214 351-4400

Want to try it on the weekend?
Pair cropped denim with a menswear-inspired shirt or a slouchy knit

Make sure the hem hits just above the ankle. You want these to look cropped, not awkwardly short.

Denim x Alexander Wang pants
$275; alexanderwang.com

Flares beginning at the knee are a little less aggressive than flares starting lower.

Platforms, chunky heels, and pointy-toed flats will elongate your legs. Stilettos won't.

Market editor: Shibon Kenned

THE STATE OF WINE

California is king, but it could have competition one of these days. By Mark Ellwood

Dan Dunn, a former nightlife columnist, spent much of his adult life doing what nightlife columnists do: drinking. He's a whiskey aficionado, cocktail expert, and beer enthusiast; wine was the only tipple that never tempted him. For a booze writer, that's less a problem than an opportunity. In 2014, Dunn hit the road to learn everything he could about American wine. He wanted to know where it stood 40 years after the Judgment of Paris, when upstart U.S. wines famously bested French vintages in a blind tasting. He turned his 15,000-mile trip into *American Wino: A Tale of Reds, Whites, and One Man's Blues* (Dey Street, $16.99), a memoir-slash-travelogue. Dunn's conclusion: "At least right now, they're not making wine anywhere in the United States better than California." (He should know. He visited at least one winery in every state, including all four in Wyoming.) But, he adds, "Forty years from now? Things are going to look a whole lot different." Dunn's glass is about half-full when it comes to these six vineyards.

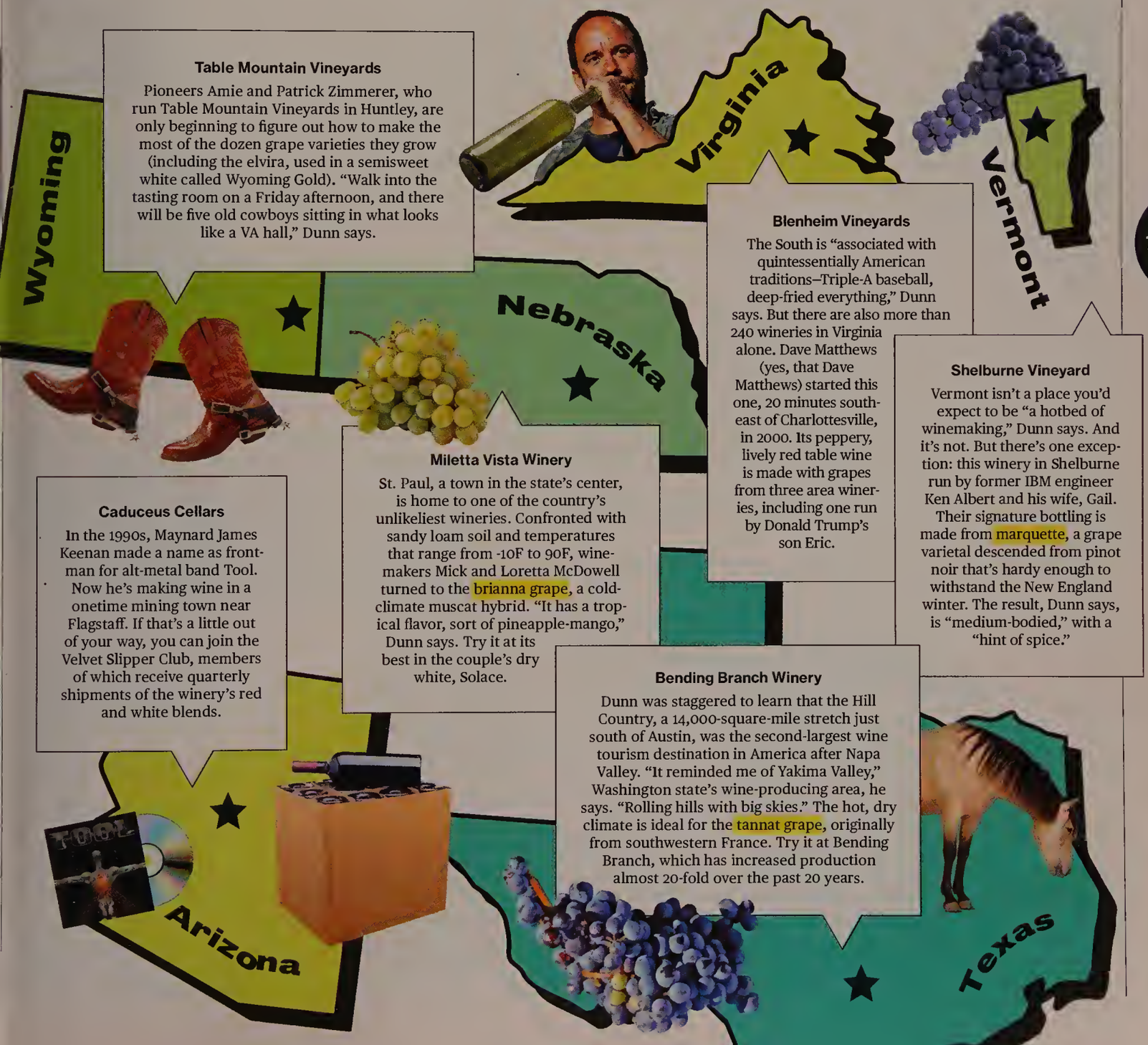


Table Mountain Vineyards

Pioneers Amie and Patrick Zimmerer, who run Table Mountain Vineyards in Huntley, are only beginning to figure out how to make the most of the dozen grape varieties they grow (including the elvira, used in a semisweet white called Wyoming Gold). "Walk into the tasting room on a Friday afternoon, and there will be five old cowboys sitting in what looks like a VA hall," Dunn says.

Blenheim Vineyards

The South is "associated with quintessentially American traditions—Triple-A baseball, deep-fried everything," Dunn says. But there are also more than 240 wineries in Virginia alone. Dave Matthews (yes, that Dave Matthews) started this one, 20 minutes southeast of Charlottesville, in 2000. Its peppery, lively red table wine is made with grapes from three area wineries, including one run by Donald Trump's son Eric.

Shelburne Vineyard

Vermont isn't a place you'd expect to be "a hotbed of winemaking," Dunn says. And it's not. But there's one exception: this winery in Shelburne run by former IBM engineer Ken Albert and his wife, Gail. Their signature bottling is made from marquette, a grape varietal descended from pinot noir that's hardy enough to withstand the New England winter. The result, Dunn says, is "medium-bodied," with a "hint of spice."

Miletta Vista Winery

St. Paul, a town in the state's center, is home to one of the country's unlikeliest wineries. Confronted with sandy loam soil and temperatures that range from -10F to 90F, winemakers Mick and Loretta McDowell turned to the brianna grape, a cold-climate muscat hybrid. "It has a tropical flavor, sort of pineapple-mango," Dunn says. Try it at its best in the couple's dry white, Solace.

Caduceus Cellars

In the 1990s, Maynard James Keenan made a name as frontman for alt-metal band Tool. Now he's making wine in a onetime mining town near Flagstaff. If that's a little out of your way, you can join the Velvet Slipper Club, members of which receive quarterly shipments of the winery's red and white blends.

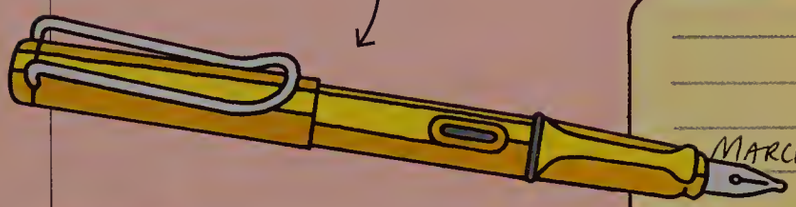
Bending Branch Winery

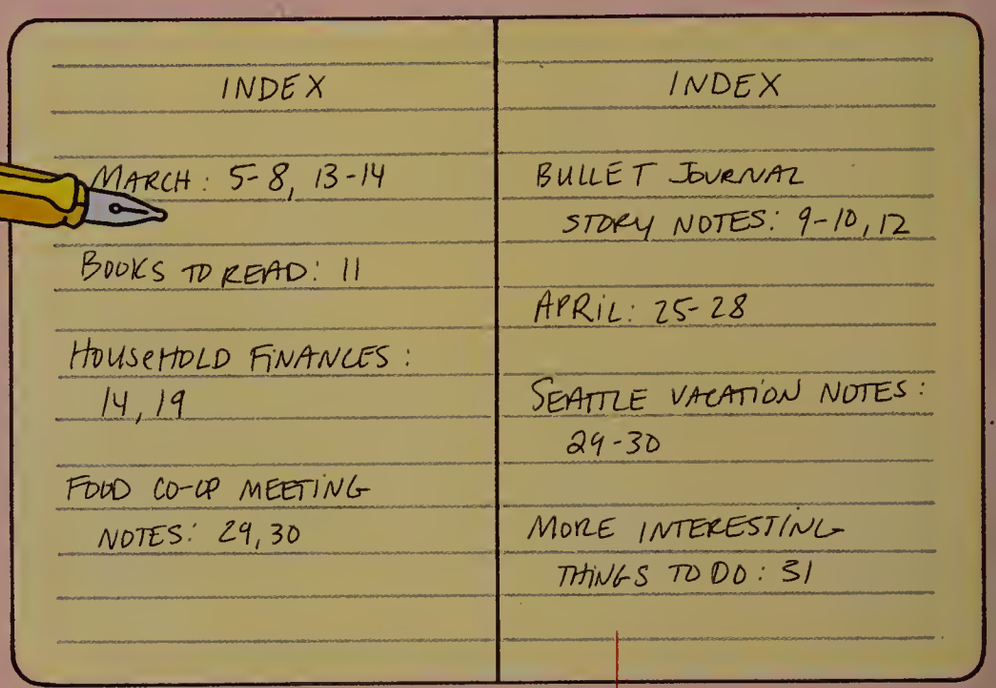
Dunn was staggered to learn that the Hill Country, a 14,000-square-mile stretch just south of Austin, was the second-largest wine tourism destination in America after Napa Valley. "It reminded me of Yakima Valley," Washington state's wine-producing area, he says. "Rolling hills with big skies." The hot, dry climate is ideal for the tannat grape, originally from southwestern France. Try it at Bending Branch, which has increased production almost 20-fold over the past 20 years.

The Pen Is Mightier

An analog approach to tracking your to-do list that's better than any app. By Janet Paskin

The **Lamy Safari** *($28.50; jetpens.com)*, a good introductory fountain pen, is durable and lightweight





This page can get crowded, people experiment with different layouts

If you really want to get into it, you can color-code different types of entries

Ryder Carroll is a bike-sharing, glasses-wearing product designer from Brooklyn, N.Y. Early in March, we met in a crowded coffee shop. No one recognized the 35-year-old, even though he's a cult Internet celebrity: Carroll invented the Bullet Journal system, a method for note-taking and day-planning that people who love paper and pens swear by.

Bullet Journaling is, according to its official slogan, "an analog system for the digital age," and thousands of young, urban professionals are adopting it as a way to organize their busy lives. Carroll's *How to Bullet Journal* instructional videos have been viewed more than 2 million times on YouTube. Devotees make their own videos and post journal photos to Instagram, where a search for #bulletjournal returns more than 66,000 results. A handful of fans write offshoot blogs, and a Reddit group formed to discuss and appreciate Carroll's invention. "This technique is a gold mine," one commenter posted on YouTube. "I track everything more accurately than my colleagues that don't use a Bullet Journal. It's saved my ass time and time again."

Carroll's ass-saving model grew out of practices he developed as the child of American expats in Vienna. He suffered from attention deficit disorder, and tutors and teachers tried to teach him how to take notes. "They didn't help," he says. "I wasn't doing the work. I was spending all my time trying to be organized." In time, he figured out a setup that worked well enough to get him through Skidmore College with a double major in creative writing and graphic design.

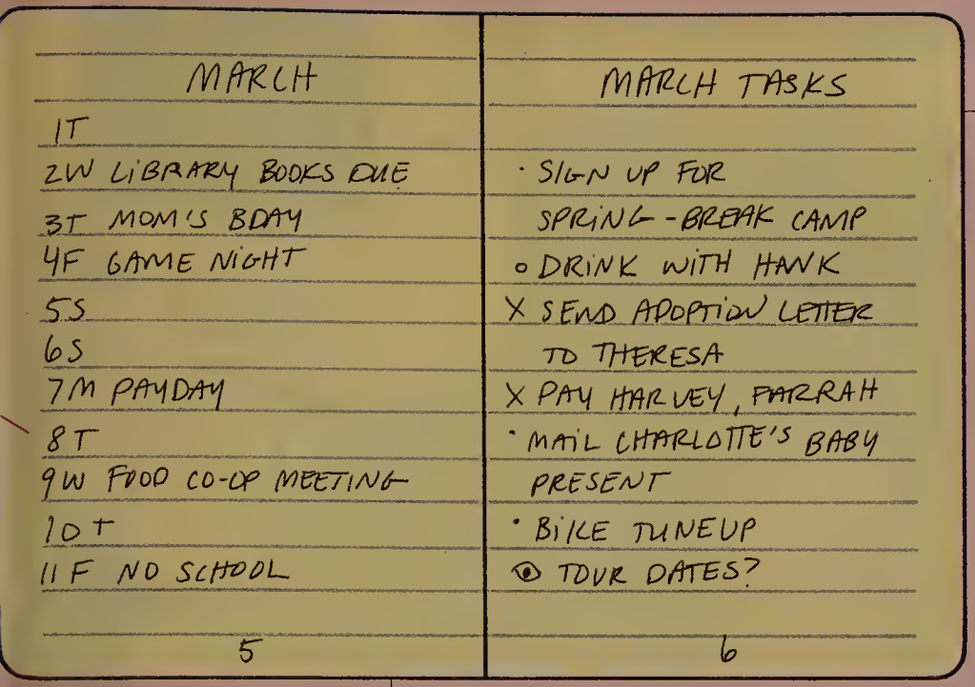
Carroll didn't consider promoting his method—or even naming it—until he offered help to a co-worker overwhelmed by planning her wedding. "Her notebook was insane. There was no structure whatsoever," he says. Impressed, she encouraged him to tell others. His first YouTube video appeared in August 2013; in September 2014 he launched a Kickstarter campaign to fund bulletjournal.com. He asked for $10,000, met his goal in eight hours, and wound up with about $80,000 from almost 3,000 backers.

Create an Index

Paper organizers can be a headache, because it's hard to know what's where. (Damn! What did I do with that list of billion-dollar startup ideas?) The Bullet Journal solves that with index pages at the front; Carroll suggests allocating four pages, or two spreads, per notebook. Each time you make an entry—a new week's worth of personal appointments, stuff to finish in April, Books I Want to Read, cutting rejoinders to that sarcastic colleague, notes from a Tim Ferris talk—you write it in the index with the corresponding page number.

I've been Bullet Journaling for a couple of weeks now. I was skeptical, partly because I didn't feel terribly disorganized to begin with—even though my "system" relies on three productivity apps, e-mail, a wall calendar, a notebook, and little scraps of paper—and partly because notebooks are terrible for collaboration. They don't back up to the cloud. You can't cut and paste, except in the most literal sense.

But there's a lot to like. The illustrations here show how I've been interpreting Carroll's system, which is based on various "modules." (It's not revolutionary so much as it is a simple and sustainable solution.) I can report that I've done all but one of the tasks I set out to do about a month ago. I feel more focused and, despite the extra time I spend maintaining my journal, less busy. And isn't that the point of being organized? B



Map Out the Month Ahead

The calendar, on the left, is a high-level, day-by-day look at the month. It's designed to quickly answer the question: Do I have anything going on today? The task list, on the right, covers everything you intend to get done that month, including stuff you blew off from the last one; every note gets a helpful symbol (see the key, right).

Ink in the **Sakura Pigma Micron** *($9.32 for a six-pack; amazon.com)* dries fast and won't fade

KEYS TO SUCCESS

Attaching a symbol to entries helps categorize them

- ● **For a task**, like "pick up dry cleaning." When you've done it, turn the dot into an "X."
- ○ **For an event**, like "annual review at noon." Collect any associated thoughts under a separate heading.
- — **For a thought**—any note, really, that's not a task or an event.
- 👁 ✳ **You can create your own icons**, or double up for additional flair. An * signals priority. An eye calls for further exploration. An exclamation point highlights inspiration.

TOOLS OF THE TRADE

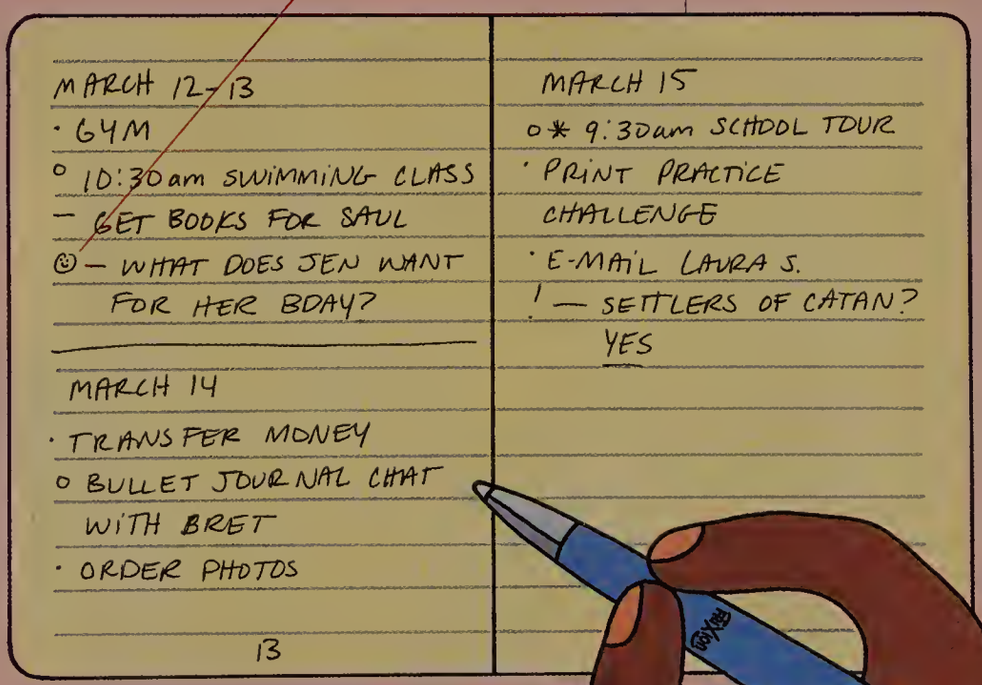
Bullet Journalers are particular about their notebooks. (Shocking, right?) Three of the most popular:

The **Baron Fig Confidant** *($16; baronfig.com)*, a little shorter and wider than standard options, has a cloth cover.

Midori's Traveler's Notebook *($46.50; jetpens.com)* is not one notepad but a series of customizable inserts—blank pages, grid pages, lined pages, etc.—wrapped in a leather cover.

Leuchtturm 1917 *($19.50; gouletpens.com)*: hard to pronounce (it's LOISH-tum) but easy to use, because the pages are numbered. It also comes in a bunch of colors.

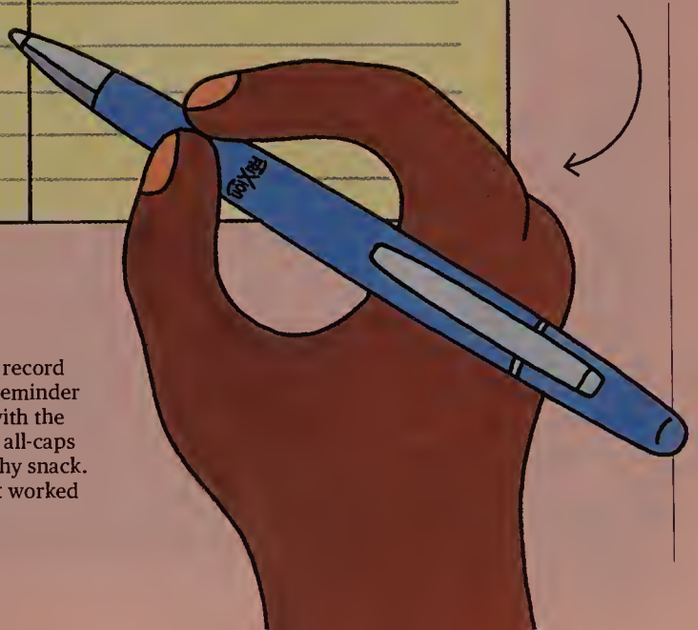
Play with symbols—try a smiley face next to a task that doesn't feel tasklike



Seize the Day

This is your scratchpad. It's where you record notes to yourself throughout the day—a reminder not to forget the impromptu meeting with the boss at 4 o'clock, an idea for a tweet, an all-caps exhortation that jelly beans aren't a healthy snack. Anything worth special attention can get worked into your monthly spread.

Perfectionists will like the erasable **Pilot FriXion Ball Knock Biz gel pen** *($33; jetpens.com)*



PIKETTY INC.

In a collection of previously published work, the celebrity economist argues for taxing the rich and rescuing the EU. By Peter Coy

Thomas Piketty's *Why Save the Bankers?* is the perfect accoutrement for a Bernie Sanders rally. At 210 pages, it's easier to carry through a crowd than the economist's 685-page best-seller of two years ago, *Capital in the Twenty-First Century*. Its title signals that it's more irascible than the rather academic *Capital*, too, and more like Sanders when he's on a roll: Why save the bankers, indeed?

Reading your copy of *Why Save the Bankers?* (Houghton Mifflin Harcourt, $26) is optional, of course. There's circumstantial evidence from Kindle that few buyers of *Capital* made it past the intro. What you'll find if you do dip in is a collection of 48 short pieces—the subtitle is *And Other Essays on Our Economic and Political Crisis*—originally published in *Libération*, the center-left French newspaper. The topics range from Piketty's hopes for President-elect Obama, to the Greek financial crisis, to whether the single-currency euro zone can hang together. (Lots on that last topic, actually.) Some essays have italicized prefaces for the benefit of American readers who may not remember every detail of, say, the Liliane Bettencourt affair.

For readers of English, Piketty's publication schedule is running backward. First came *Capital*, a heavy-duty book that forced people to wrestle with the implications of wealth inequality of "r>g" (don't ask). Last year, after *Capital*'s surprising success, came the slightly more accessible *The Economics of Inequality*, which had preceded *Capital* in the French market. And now the journalistic *Why Save the Bankers?*, which uses columns spanning almost eight years, from 2008 to 2015.

THERE'S PLENTY FOR THE 99 PERCENT TO BE MAD ABOUT

Economists are still arguing over the data and conclusions of *Capital*, the book that vaulted Piketty to fame. In March, three authors from the Federal Reserve Board staff and one from the University of Pennsylvania presented a paper at the Brookings Institution saying that things aren't as bad as he and others have made out. Wealth and income concentration at the top, they wrote, has risen by half as much in recent years as Piketty and two other French economists, Emmanuel Saez and Gabriel Zucman, estimated they would.

But even if you discount half of what Piketty claims, there's plenty for the 99 Percent to be mad about. He offers a solution in one essay: "Taxes are the only weapon that can put a stop to the insane explosion of very high pay."

As a columnist, Piketty is in roughly the same camp as Paul Krugman, the liberal Nobel laureate economist who writes for the *New York Times*. Piketty is less snarky and jokey, though; slightly further to the left; and more given to grand pronouncements such as "Left to itself, capitalism, because it is profoundly instable and inegalitarian, leads naturally to catastrophes." Another difference is that Piketty occasionally explicates some complicated economic topic—like how to structure Social Security taxes—that Krugman would be likely to shunt off to his blog and label "wonkish."

It appears that Piketty and his publishers are repurposing old material to profit from his worldwide fame. There's nothing wrong with that. In fact, it demonstrates that he's learned a lot about capitalism in his *recherches*—including how to exploit its wonderful wealth-producing potential. B

Critical Mass
A random ranking of recent bad behavior
Most Worst
SECRET WEAPON
A Minnesota startup, Ideal Conceal, is developing a $395, two-shot pistol that folds up to look like a smartphone. It will be available later this year, but if you want the semiautomatic version the company's working on, you'll have to wait until 2018.
76
ALL ABOARD
A—let's be kind—naive British government agency solicited name suggestions online for a $287 million polar research ship. Of course, the Internet's favorite was the *R.R.S. Boaty McBoatface*.
53
BUY ME SOME PEANUTS AND...
Because watching a team forecast to lose 94 games isn't punishment enough, this season the Atlanta Braves are offering concession items like the "Punisher," a barbecue sandwich with a Monster Energy drink sauce.
41
NO LAUGHING MATTER
Police arrested a North Carolina man who had an outstanding warrant against him for not returning a VHS tape—the comedy *Freddy Got Fingered*—that he rented in 2002.
16
Least Worst

ILLUSTRATIONS BY TIM LAHAN

RUSSELL WALLACH

51, president of media and sponsorship, Live Nation, Washington, D.C.

What's Live Nation?
The largest music company on the planet. We produce 25,000 live shows a year, all over the world, with the biggest artists—U2, Jay Z, Madonna—as well as emerging talent.

You must travel a lot.
Every week—200,000 miles a year.

Is this your travel uniform?
Yes. It's cold sometimes on flights, so I might end up wearing the jacket the whole time. But if I'm flying to L.A., I can take the jacket off.

What's special about the jacket?
It's got a lining you can take out so you can wear the shell in the spring.

Do you clothes shop?
If I like something, I buy a few. I've got a few pairs of Nike sneakers and probably 10 of these T-shirts.

Why Nikes?
I have a standing desk, and they're the most comfortable I've found.

Have you always been a casual guy?
Early in my career, I had to wear a suit and tie. I never understood it, because I was on the phone in my office most of the day. Just being able to wear whatever is appropriate for the situation makes a lot more sense to me.

Your glasses make your look.
I always need my wife or someone at the store to help me out with a new pair that don't have my lenses in them yet, because I really do need my glasses for seeing.

Interview by Arianne Cohen

MARGARET CHO

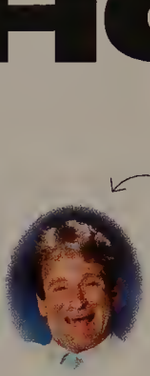
Comedian

With her mother, 1970s

"I had flaming pink and orange hair, so I was visually loud but never said a word. I was a terrible student–I just didn't go to class. I dropped out senior year, 1986."

Education

San Francisco School of the Arts



"I did sets at this club, Holy City Zoo, and Robin Williams would come perform. It was such a nightmare to be a teenager and follow Robin Williams."

Work Experience

1987–90
Salesperson, Stormy Leather, San Francisco

1988–93
Stand-up comic

1993–95
Producer, star of *All-American Girl*, ABC

1995–2004
Stand-up comic, author

2004–05
Screenwriter, star of *Bam Bam and Celeste*

2005–15
Stand-up comic, concert host

2008
Executive producer, star, *The Cho Show*, VH1

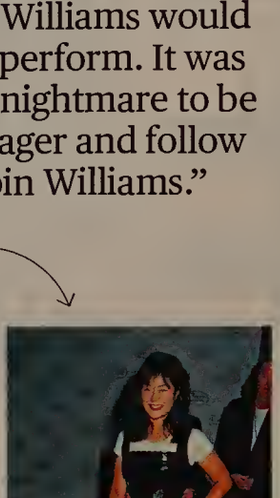
2014–Present
Recording artist, executive producer, stand-up comic

"I was considered too fat to play the role of myself, which was absurd. We shot 19 episodes. It was my big break, and when it was canceled, it was just devastating."

With Richard Jeni (left) and Bruce Vilanch at Comic Relief, 1995

"It's about two misfit kids on a road trip. I was encouraged to make the movie by Quentin Tarantino, who was my boyfriend in the '90s."

At the Comedy Hall of Fame, 1990



"I was doing comedy, drinking a lot, and being pretty self-destructive. Then I did a show about all that, *I'm the One That I Want*, which was very successful and turned into my first book."

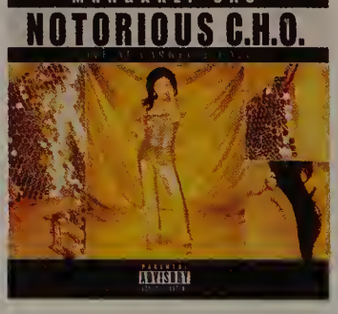
"I did half a dozen tours and hosted *True Colors*, Cyndi Lauper's tour. I got to be with people that I'd idolized–Joan Jett, Debbie Harry, the Indigo Girls–and watch great rock shows. I went on between every act and learned how to do large-arena audiences."

"It was a docu-series, like the *Kardashians*. If it had happened a few years later, the show would've lasted longer."

Starting in 2015, Cho became Special Co-host for *Fashion Police* on E!

As a guest on *The Late Show With Stephen Colbert*, 2015

"*American Myth*, out April 29, is the first album I've composed music for. It's rock 'n' roll, and I'm really proud. I have *Highland*, a show about a family that runs a marijuana dispensary that I'm co-creating for Amazon. And I'm touring."



The album from her 2002 one-woman show, *Notorious C.H.O.*

Life Lessons

1. "If it's painful, you're learning something." **2.** "Respect your audience. It's a big deal for somebody to come see you." **3.** "Let it go. Whatever it is, let it go."

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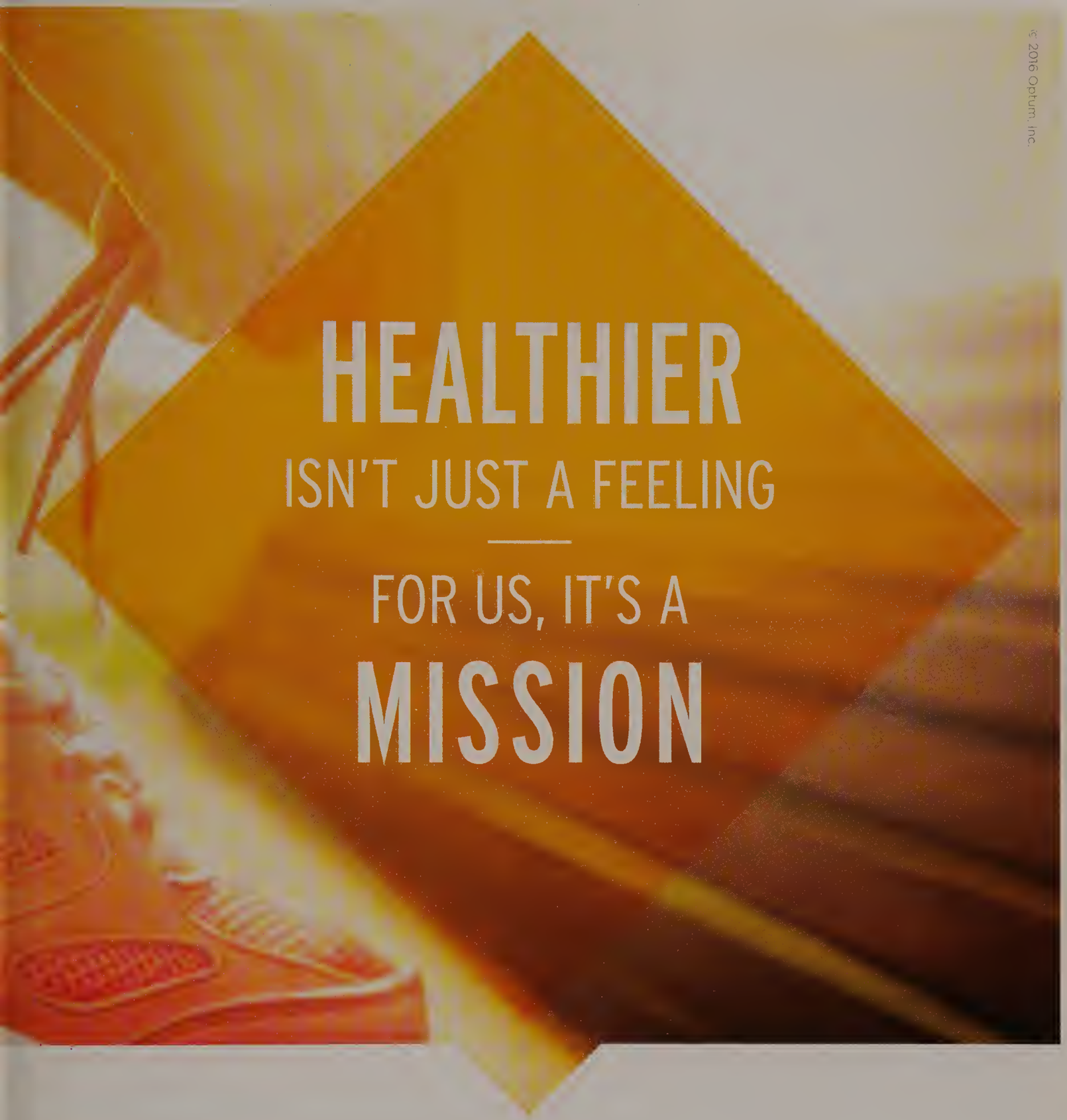

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by Jirasak P.

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